UNCLE SAM'S NEW WATERWAY

WILLIAM·E SIMMONS

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PANORAMIC VIEW OF THE NICARAGUA CANAL

UNCLE SAM'S NEW WATERWAY.

Nicaragua

BY

WILLIAM E. SIMMONS.

F. TENNYSON NEELY,
PUBLISHER.
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UNCLE SAM'S NEW WATERWAY.

CHAPTER I.

INTRODUCTORY.

THE Land of the Great Water! That was the poetic idea embodied in the ancient Indian name of which the Spanish corruption is Nicaragua. The Indians displayed comparatively wide topographical knowledge, as well as poetical sentiment, in naming their country, as it is distinguished by the largest lake to be found within the entire reigon of Aztec occupation. But even that is not the whole truth, for there is no other body of fresh water of like magnitude between Lake Michigan and Lake Titicaca in Peru. And the name itself, after centuries have rolled by, after the civilization which coined it has vanished from the face of the earth, and after its fitness has been verified by thorough exploration of the American conti-

nent, is now about to acquire new point and increased significance by the march of modern improvement. For who can doubt that when the great enterprise planned by American genius and undertaken by American capital, is carried to successful completion, Nicaragua will come to be known as the Land of the Great Waterway; the interoceanic highway between the nations of the East and the nations of the West?

If the reader will hold his right hand open, with the palm upward and the thumb close to the side, he can get a concise and convenient idea of the general configuration of the country. On the side of the thumb he will have the Atlantic, on the other the Pacific Ocean, while in the hollow of his hand he will hold the great lake. The irregular line at the junction of the wrist, and to the right of the center, will mark the course of the noble San Juan River, flowing to the Atlantic along the eleventh parallel of north latitude, carrying off the water of the lake, and forming, for the greater part of its course, the Costa Rican boundary, which also extends westward of the lake along the same

line. The tip of the thumb will indicate the position of Cape Gracias, at the northeastern extremity on the Caribbean Sea, and an irregular line thence to the Bay of Fonseca, at the base of the little finger, the boundary of Honduras. The Bay of Fonseca separates the Peninsula of Coseguina, which is the northwestern extremity of Nicaragua, from the southern end of Salvador. At the tip of that peninsula stands the famous volcano Coseguina, which, although it had the appearance for centuries of being dead, suddenly burst into activity in 1835, and covered the country with a pall of dust and smoke for four days. That was one of the most extraordinary eruptions of which history has any record. The dust fell over 1,500 miles of land and water, from Jamaica in the West Indies to Bogota in South America.

Nicaragua extends over four and a half degrees of latitude and longitude. It lies between 10° 30′ and 15° north latitude, and 83° 11′ and 87° 40′ west longitude. Its southern frontier extends over about one and three quarter, and its northern frontier over four and a half degrees of longitude. Its Atlantic coast line

stretches for 280 miles southward from Cape Gracias à Dios to Greytown, or San Juan del Norte, at the mouth of the San Juan River, and its Pacific coast line from Salinas Bay northward to Coseguina, a distance of about 200 miles. The area of the country is 58,500 square miles. The Atlantic, or, as it is usually called, the Mosquito Coast, from the fact that it is inhabited by the Mosquito Indians, is low, swampy, and fringed with numerous reefs and islands, the chief of the latter being Great and Little Corn, Old Providence, Longreef and Tangweera. The two lagoons of Pearl Cay and Bluefields afford good harbors for vessels of light draft, but the best harbor on the coast is that of Greytown. Although accessible forty years ago to the largest ships, the shifting southward of the mouth of the San Juan River, about 1866, closed up the entrance, and converted the harbor into a lagoon, without any outlet to the ocean. The harbor remained closed until 1890, when it was opened again by the commencement of work on the Nicaragua Canal. The Pacific Coast, on the other hand, is bold and rocky, free from islands or reefs, and indented

by several safe and commodious harbors accessible to any vessels. The chief of these are San Juan del Sur and Realejo, which has been called "as good a port as any in the known world." Brito, which is often spoken of as a port, is nothing more than an open roadstead, formed by a depression of the Coast line.

Along the Atlantic coast the land is flat, generally speaking, from six to eight feet above the level of the sea, and characterized by few eminences, and it preserves these features for twenty to forty miles in the interior. Then it rises rapidly in the foothills of the Cordilleras of the Andes. This range declines southward toward the valley of the San Juan, where the mean elevation is less than 500 feet above the level of the ocean, and there is nowhere a peak more than 2,000 feet high, but northward, toward the Honduras frontier and throughout the extensive districts of Chontales, Matagalpa and Segovia, it rises to an average height of 4,000 to 5,000 feet. On the side of the lake the descent is sharp, but toward the Atlantic the decline is in a succession of broad terrace-like plateaus broken by disconnected peaks.

The most striking geographical feature of the country "is the remarkable depression stretching for about 300 miles northwest and southeast parallel with the Pacific Coast, and transversely to the Central American plateau, which it almost completely interrupts. This depression, which lies at a mean elevation of scarcely 100 feet above the level of the sea, is now flooded by the two great lakes of Managua and Nicaragua (Cocibolca), which collect nearly all the drainage of the western provinces, discharging it through the *desaguadero* (outlet) of the Rio San Juan to the Atlantic." Lake Nicaragua is a magnificent body of water, about 125 miles long and from forty to seventy-five miles wide. From the middle of the lake the shore line on either side is invisible, and the only land in sight are the distant, lofty peaks which surround it on nearly all sides. The mean level of the lake is, as determined by actual surveys for the purposes of the canal, 110 feet above the level of the sea at Greytown. North of the Great Lake and only sixteen miles distant, lies Lake Managua, which, however, is twenty-four feet above its level.

The two lakes are practically disconnected, but there is a channel, the Rio Tipitapa, through which the upper lake discharges its overflow into the lower in times of flood. Lake Managua is about fifty miles long by thirty-five miles wide.

West of the lakes the depression, throughout its entire length "is traversed by a remarkable volcanic chain of isolated cones, which north of the lakes takes the name of the Maribios (the Marvels), terminating in the extreme northwest with Coseguina (4,000 feet high), and in the extreme southeast with the low wooded archipelagoes of Solentiname and Chichicaste, near the head of the desaguadero. Between these two extremes the chief cones proceeding southward are: the Maribios chain, comprising El Viejo (6,000 feet), Santa Clara, Telica, Orota, Las Pilas, Axosco, Momotombo (7,000 feet, highest point in the state), all crowded close together between the Gulf of Fonseca and Lake Managua; Masaya, or Popocatepec, and Mombacho (5,700 feet), near Granada; lastly, in Lake Nicaragua, the two islands of Zapatera and Ometepec, with its twin peaks Ometepec

and Medeira." The "Encyclopædia Britannica," from which the foregoing quotation is made, gives the height of Ometepec and Mederia as, respectively, 4,100 and 4,190 feet, but that is an error. Ometepec, which is the taller of the two by fully twenty-five per cent., is about 5,280 feet high.

There is a remarkable difference in the character of the country east and west of the lakes, as far as vegetation is concerned. The mountain sides and plateaus of the eastern slope are covered, except where broad savannas occur in the Chontales, Matagalpa and Segovia districts, with a dense tropical forest of stupendous and apparently primeval growth. The mountain sides and tablelands, on the western slope, on the other hand, are rather sparsely covered with vegetation, and where trees occur, except in the valleys of the larger streams, they are generally of stunted growth. Again, east of the lakes the country is perennially clothed in green, while west of the lakes, during the latter part of the dry season, January to May, the aspect of the landscape is sere and rusty. Throughout the Maribios district occur

mal pais or barren lava fields, but the great plain of Conejo in that district and the even more extensive plain of Leon, west of the range, are fertile and thickly populated. Further southward the districts of Managua, Granada and Rivas are traversed by a low range of hills, called the Coast Range. Here the mean level of the land is less than 100 feet above the surface of the lakes, and except the mountains Mombacho and Masaya, already spoken of, there are no peaks more than 2,000 feet high. A few miles south of Rivas the land falls to the lowest elevation found on the Pacific Coast of the American continent. At the highest point it is only forty-one feet above the level of the lake (Nicaragua) and 142 above highwater mark on the Pacific.

The physical aspects of the country have been indicated in a general way in what has gone before, but they may be spoken of more particularly before proceeding further. Journeying westward from the Atlantic Coast, the traveler crosses first the flat forest-covered lands, characterized chiefly by black alluvial soil, then encounters rising ground still densely wooded,

where rocks and clay crop out of the loam. This rising ground soon becomes mountainous, declining in altitude toward the valley of the San Juan, in the south, and increasing in altitude toward the north, where in Chontales, Matagalpa and Segovia, occur broad tablelands and savannas at great elevations above the sea. From the summit of this mountain range the descent is sharp to the basin of the lakes. On the Pacific coast, the great volcanic range, beginning in the north at the Gulf of Fonseca, breaks away, west of the lakes, into a series of plains of no considerable elevation above the level of the lakes, but with a sensible decline southward to the locality of Rivas. From some distance above Leon to Rivas, a distance of 100 miles, the land is mostly cleared or sparsely wooded as compared with the Atlantic slope. South of Rivas, about eight miles, are extensive "jicarals" (pronounced hic'-o-rals), or barren plains sparsely wooded with the jicara tree and a peculiar shrub called the bull's thorn. It may be mentioned in this connection that plains of the same character occur in the districts east of the lakes. Further south than

the jicarals near Rivas, the land rises again to form the Santa Clara hills and becomes heavily wooded.

North of Granada, which is on the west shore of Lake Nicaragua, near its head, occur volcanic lakelets, such as that of Masaya, beside the Indian town of the same name. These are crater-like openings in the earth, and are filled with water, the level of which is in some instances more than 300 feet below the surface of the earth. Higher up north, throughout the region of the Maribios, occur numerous *infernillos* or low mounds, which send forth sulphurous smoke, and at night blue flames that give a weird illumination to the surrounding country. Indeed, the evidences of volcanic energy are so numerous and plain, throughout this part of the country, as to justify the remark of Squier that: "No other region of equal extent probably betrays so marked traces of igneous action as that portion of Nicaragua intervening between its lakes and the Pacific." It should be borne in mind, however, that those traces are much less remarkable south of Masaya than north of it. Throughout the

western part of Nicaragua the soil is a reddish loam, which, under the influence of the periodic rains, or of irrigation, is extremely fertile. During the latter part of the dry season, however, the country generally has a dusty and desolate appearance.

There are no rivers worthy of the name emptying into the Pacific, although there are numerous deep ravines, which in the rainy season become the beds of rushing torrents. The same remark is applicable to the streams that flow into the lakes, with the exception of the Rio Frio and the Rio Negro, which flow into the southern part of Lake Nicaragua, and the Rio Synagapa, which empties into the northern part of Lake Managua. The first named is a bold river and the other two are considerable streams. Several important rivers flow, however, from the eastern slope of the Cordilleras to the Atlantic. The nearest of these to the Honduras border is the Coca, called also the Wanks and the Segovia, and by the Indians of the highlands the Telpaueca. This river is several hundred miles long and it empties into the Atlantic not far below Cape Gracias, after

flowing through a comparatively unexplored territory. Further south is the Wama or Sisin Creek, and, still proceeding south, the Rio Grande Great River or Amaltara, the Escandida, Bluefields, or Rio del Desastre, which is also a large stream of considerable length, and noted as having once been a favorite retreat for the pirates of the Spanish Main. Lastly comes the San Juan River, which is the only one of the rivers of Nicaragua that has been thoroughly explored from the ocean to its source, and, in addition to being the best known, is the most important in the country. It is, as has already been said, the *desaguadero*, or outlet, of Lake Nicaragua, and from its head at the lower end of the lake to its mouth at the ocean, is about 125 miles long. For about half its length it is a sluggish though deep and broad stream, but after receiving the waters of the San Carlos from the mountains of Costa Rica, it is rapid and exceedingly turbid. Throughout its course it is 300 to 400 yards wide, and, except at the rapids, over twenty feet deep. Its navigation is impeded by four rapids, three of which are passable during the rainy season to

steamers of light draft and moderate power. These rapids, in the order of their occurrence proceeding upstream, are the Machuca, the Balas, the Castillo and the Toro. The distance between the first and second is six miles, and the same between the second and third, while it is nine miles between the third and last. The Castillo rapids are generally impassable. There is much conflict of testimony as to the navigability of the river in the early days of Spanish colonization. Some of the old chronicles speak of ships as sailing from Spain direct to Granada on the west shore of the lake, and it has been asserted to account for the existing obstructions to navigation, that the rapids were formed by the Spaniards throwing rocks into the river to bar the passage of English ships during the wars between the two countries in the seventeenth century. The character of the rapids, however, makes that explanation a manifest absurdity. Probably the truth is that in times of very high water the rapids were passable to vessels such as the Spaniards used in the sixteenth century, and one or two of these might have reached Granada and given

rise to the statements contained in the chronicles.

Of the circumstances which determine the commercial importance of a country, few take rank with the character and variety of its productions. The products of Nicaragua are useful and varied, and only the development of her industries is needed to yield them in vast quantities. A passing glance at the geology of the country will introduce a large class of natural products. West of the lakes the soft volcanic rocks, or tufas, which make excellent building material, abound upon the surface or within easy reach of it, while along with these occur sulphurous pumice and other recent volcanic formations. East of the lakes are found in great quantities andesite rocks, trachytes, greenstone, and in the Cordilleras, metalliferous porphyries abounding in gold and silver quartz. Gold mining has long been carried on, though not with very great success, by an English company, in the neighborhood of Libertad in the Chontales district, and silver mining, with better results, in the Matagalpa and Segovia districts. According to recent reports, more

important discoveries of gold have been made in previously unexplored parts of Segovia, and in the lower part of the Chontales district, near the head of the Savallo River, which flows into the San Juan a short distance above Castillo. The difficulty of transporting suitable machinery through the dense forests and over the steep mountains has hitherto stood in the way of successful mining on a large scale, so that the output of the precious metals has seldom exceeded $200,000 per annum. The vast forests that cover the country, over a wide extent of territory, without a break from the Atlantic to the lakes, abound in woods, gums, medicinal and flavoring plants, all of value and already known to commerce. Among the first are mahogany, cedars, rosewood, ironwood, logwood and many other dyewoods; among the second, rubber and gum copal; and among the last, vanilla and sarsaparilla.

The cultivated portion of Nicaragua constitutes but a small part of its total area. A comparatively insignificant section of the Chontales district, with larger portions of the

Matagalpa and Segovia districts, are under cultivation east of the lakes. West of the lakes the area of cultivation extends from the plain of Conejo south to Rivas, over a stretch of country from twenty to forty miles wide and more than 100 miles long. There are, however, large tracts of uncultivated land interspersed between the cultivated tracts, even in that section. The staple products are corn, rice, sugar, beans, cotton, tobacco, coffee and cocoa. A great variety of vegetables is also raised. Coffee raising has been largely developed within the last five years, and a government bounty of five cents per tree is stimulating it to further extension. The coffee tree flourishes only at comparatively high altitudes, but the numerous mountain sides afford a wide field for its cultivation. The slopes of Ometepec and Medeira, in Lake Nicaragua, have long been covered with coffee plantations, which are among the most productive in the country. The nature of the climate makes a succession of crops possible. Sugar yields two to three crops during the year, and corn, which is the staple food of the Indian population, yields

four crops. Nicaragua is indeed a fruitful land, for its variety of fruits is astonishing. Bananas, plantains, guavas, and many others grow wild in the forests, but the two first named are of course greatly improved by cultivation. Mango trees, burdened with fruit, form hedges along the highways in the Rivas district. Oranges, lemons and limes abound throughout the western provinces, while watermelons, muskmelons, and citrons, are to be had all the year round. Another product usually classed as a fruit, but in reality a vegetable, and without an equal for a salad, is the alligator pear.

The cultivation of cacao is a profitable industry. The government gives a bounty of ten cents for every tree planted, and it is said that every pound of the beans raised can be sold in the home market for consumption at fifty cents. The famous Paris house of Menier has a large plantation in the Rivas district.

Besides the products of the soil an important industry is cattle raising. Large herds are bred both in the eastern and western provinces, and hides form one of the chief articles of export. The eastern part of the country, how-

ever, is the better adapted to the raising of cattle, as in the western provinces the animals suffer greatly from thirst during the prolonged droughts, when all the streams are dried up and dependence for water is placed almost entirely on wells, where cattle are watered at fifty cents per head per month. The foreign trade of the country is as yet comparatively trifling, the exports being only about $3,000,000 and the imports about $3,500,000 per annum. The principal ports are Greytown and Bluefields on the Atlantic, and Corinto and San Juan del Sur on the Pacific coast.

It is not too much to say that the climate of a country exercises as potent influences on its inhabitants as do their inherited tendencies; for where races are concerned, the inherited tendencies are largely determined by climatic conditions. But little has been said of the climate of Nicaragua in English-speaking countries and that little is in the main inaccurate. When the author, in the early winter of 1891, mentioned to his friends that he thought of going to Nicaragua, they with one accord attempted to dissuade him from taking the trip.

In explanation of their solicitude it was affirmed that it was dangerous for a white man even to enter the country; that yellow fever generally, and Chagres fever always prevailed there. That is unquestionably a fair statement of the popular opinion prevailing in the United States on the subject. Nevertheless the author went, and although subjected to unusual exposure, even for a native, his experience was that he never enjoyed better health in his life than during his stay in the country. It is said by a very high authority that on the uplands of Chontales and Segovia, 2,000 to 3,000 feet above the level of the sea, the climate is mild and healthy and generally suited for white men, but elsewhere it is distinctively tropical, and the Mosquito coast is malarious. Greytown is on the Mosquito coast, yet it may well be doubted if there is more malaria there than in some parts of New Jersey. Some trustworthy testimony on that point will be given below. In the meantime something must be said about the climate of the country in general.

There is a marked difference between the

temperature on the east and the west coasts. No accurate statistics are to be had concerning the west coast, but if the feelings are to be trusted, the latter is the hotter by at least ten degrees. Indeed there is very good reason why it should be. Nicaragua lies within the zone of the northeast trade winds, which, except in the rainy season, are denuded of their moisture by the mountain range east of the lakes before they reach the west coast and are, consequently, when they reach it comparatively hot and dry. Greytown is a hot place because it is built on low ground and shut off from the sea by a thick wood, but America, the canal company's settlement, on the north side of the harbor, being open to the sea is swept by a perpetual gale, and, so far as temperature is concerned, is a more delightful place than Long Branch.

On the west coast rain seldom if ever falls between December and May, but on the east coast, contrary to the general impression prevailing outside of the country, there is, as shown by the recorded observations of the canal company's medical corps at Greytown,

some rain in each month of the year. This is, undoubtedly, another effect of the trade winds, which come to that coast all the year round heavily laden with moisture. In the year 1891 the rainfall varied from 4.93 inches in May to 52.55 inches in July, and notwithstanding that the rainy season nominally ends with November there was a fall of 41.65 inches in December. The average monthly rainfall was 24.75 inches, and the average daily fall for the year, .819 inches. The maximum temperature, 89° 5′, was reached in September, and the minimum, 70°, in January. The monthly averages were: January, 75°; February, 76°; March, 77°; April, 75°; May, 75°; June, 79°; July, 78°; August, 78°; September, 83°; October, 77°; November, 76°; December, 76°.

Thus it is seen that the heat is at no time of the year excessive, and the steady sea breeze relieves the atmosphere of the muggy and oppressive conditions that so often prove distressing in our Northern summers. As to the healthfulness of that part of Nicaragua covered by the operations of the canal company, which it must be borne in mind extend into the heart

of the dense tropical forest lying between Greytown and the highlands, the following trustworthy testimony is given by Dr. J. Edward Stubbert, the chief surgeon of the company. "It has been generally supposed that this country teems with fatal diseases, and that our employees are exposed to severe and dangerous types of fevers. After a professional experience of ten years, most of which time has been spent in the tropics, and being familiar with nearly every climate of the globe, I can state, decidedly, that in my opinion Nicaragua is exceptionally free from any fatal endemic disease. This fact I wish to emphasize, viz., that out of over 1,690 patients, only twelve have died from diseases that may be termed climatic." The most prevalent diseases are remittent and intermittent fevers, which supplied 636 cases of the total given above. "The disease," continues the same authority, "which is most liable to prove fatal is dysentery, which, however, is characteristic of it in all climates. Most of the diseases met with have been mild in type, this being especially true of bronchitis and pneumonia, the latter fre-

quently having its crisis on the sixth day. The cases of fever, when of the remittent or intermittent types, are very amenable to treatment and not of long duration; the former generally disappearing in about four and a half instead of twelve to fourteen days, its usual duration in the States. No epidemic diseases have visited the country since the company has been at work, and the occasional rumors one hears of such visitations in the past, on investigation seem to lack sufficient evidence to give them credence. The climate of Nicaragua is, as has been asserted, and we think proven by the record of this department, a salubrious one. Far removed from the severity of northern winters, even while geographically in the tropics, we enjoy an equable temperature throughout the whole year." In a succeeding chapter I shall give the testimony of another competent observer as to the healthfulness of Greytown.

CHAPTER II.

GOVERNMENT, POPULATION, HISTORY.

At the Paris Exposition of 1889 Nicaragua made a display of products that reflected credit on the industry and enterprise of her people. Visitors to her pavilion were presented with a souvenir in the shape of a card, bearing on one side medallion photographs of the seven men who had succeeded each other as president of the republic from 1859 to that time, and on the other a summary of its history which pointed with pride to the fact that it was the only country in America that had enjoyed uninterrupted peace during that period. This fact has not generally been borne in mind by writers on the country. Unfortunately, however, subsequent events have made this but an idle boast.

The government is republican in form and modeled after that of the United States, but differing in some important respects. For example, there is no vice-president, and the suc-

cession is provided for by a mechanism more complicated than convenient. The names of five senators written, each on a separate slip of paper, are sealed in as many envelopes and these are placed together in a receptacle, from which three are drawn and filed in the state archives, while the other two are burned without being opened. In case of the death of the president, the first of the three envelopes on file is opened by regularly constituted authorities, and the senator whose name is written on the inclosed slip is immediately proclaimed president. If the first envelope should contain the name of a senator who has died in the interim, the second envelope is opened, and so on. Apparently the framers of the constitution were fearful that the creation of a vice-presidency would make room for a dangerous growth of individual ambition, and this device was adopted as a safeguard against the consequent perils. In that country, where there is a strange intermixture of simplicity and cunning, it is supposed to successfully conceal the identity of the successor to the presidency.

The government consists of a president and a

congress of two houses; a senate and a house of representatives. The president and senators are elected for four years and the representatives for two years. The president has a cabinet of his own selection consisting of five ministers: of foreign affairs and agriculture; of commerce and public instruction; of finances; of war, fine arts and public works; of the interior, justice and ecclesiastical affairs. The senate has ten and the house eleven members. There is a supreme court of two branches, one of which sits at Granada, the other at Leon. In each department also is a resident civil and criminal judge. The country is divided into seven administrative departments. On the east side of the lake are, proceeding northward, Chontales, Matagalpa and Segovia; on the west side of the lake, proceeding southward, Chinandega, Leon, Granada and Rivas.

Besides those there is the Mosquito Reservation, along the Atlantic coast, embracing about 9,000 square miles. This, however, is not provided for as a whole in the administrative economy, as it preserves a sort of autonomy under the joint protectorate of Nicaragua and Great

Britain. Still three of its towns—Greytown, America and Bluefields—are virtually under the control of the government of Nicaragua. America is the settlement built by the Nicaragua Canal Company on the west side of Greytown harbor

The elective franchise is so limited as to leave the country little of democracy except the name. Thus, the departmental and municipal officers instead of being elected by the people are appointed by the president, who is therefore virtually an autocrat; but even that is not all. By another exercise of authority he can, at least materially, affect the result of the only elections held: those for officers of the general government. Under the constitution soldiers are not allowed to vote, and the president at his discretion can make a complete change in the personnel of the army by discharging the whole force and enlisting new men. So by enlisting his political opponents he can effectually disfranchise them. It has been charged that fully 7,000 opponents of the present incumbent were in that manner disfranchised immediately before the last election,

There is no navy, and the army is a military comedy. In many cases the garrison of a town consists of half a dozen hatless, coatless and barefooted men, whose muskets are their only military distinction. Almost everywhere the army is required to do police duty. There is a much greater military display at Managua, the capital city, than anywhere else, but even there the display is confined to the officers. However, at that place the credit of the army is somewhat redeemed by a very good and very well uniformed military band. One of the military customs of the country has given a peculiar local significance to the word volunteer. The soldiers are called volunteers, but it often happens that an unoffending citizen is seized in the street or a public house and hustled before the commandante, who, if he be unable to show by documentary or other evidence that he is engaged in regular employment, forthwith orders his enlistment. Nevertheless, the victim is thenceforth called a volunteer.

Education is more general than the visitor expects to find it. Besides a public school

system there are two higher institutions of learning: the University of Leon, which has faculties of law, medicine and theology; and the university of Granada, which provides a law department and an intermediate course. The public school system furnishes free common schools for each township. These schools are well attended and apparently fairly up to the requirements of the people, for the majority of the younger persons the visitor comes in contact with are able to read and write. Of course, Spanish is the language of the country, but many of the common people are able to make themselves understood in English, while the better educated classes generally speak French and in some cases German as well as English fluently. The government spends annually $453,000 for educational purposes, and of that sum $176,000 are devoted to the maintenance of the common schools. As the total revenue of the government is less than $6,000,000 per annum, the sum expended on education is comparatively large.

Catholicism is, by the constitution, the established religion of the country; but freedom

of worship is guaranteed by the treaties with the United States and England. There is a Moravian mission at Bluefields and a Baptist, a Methodist church and an Episcopal colony at Greytown, but absolute conformity everywhere else. There are, however, no monasteries or religious orders, those having been suppressed in 1829, about thirty years prior to the adoption of the existing constitution. In its ecclesiastical jurisdiction, the country is a suffragan bishopric subordinate to the Archbishop of Guatemala, and is divided into 117 parishes under the control of 100 incumbents.

The policy of the government offers exceptional advantages to property holders. There are no taxes on real estate or personal property. The government revenue is derived chiefly from duties on imports, a native brandy called aguardiente distilled from sugar cane and a duty on tobacco. The total revenue for 1889-90 was $5,755,834.20, of which $1,705,000 was derived from the duty on imports; $1,096,000 from aguardiente; $539,000 from tobacco; and $517,000 from the National Railroad, which runs from Granada to Managua and from

Momotombo to Corinto. An ad valorem duty of fifty per cent. is levied on all imports except liquors and tobacco, which are taxed much higher. The imports in 1890 aggregated $3,327,006.43, of which England contributed $995,884.86; France, $531,276.45; Germany about the same amount as France, and the United States, $597,042.95. The exports in the same year were $3,834,137.66, of which $461,634 went to England; $793,249.50 to France, and $1,169,050.64 to the United States. Foreign commerce has increased slightly since. In 1895 the imports were $4,116,855, and the exports, $4,994,519.

No trustworthy census has ever been taken, and none of any kind for many years. Hence the population is a matter of uncertainty and dispute. At least a decade ago it was estimated at 500,000, but more recently it has been put at about half that number. The latter estimate, however, is attributed by Nicaraguans to the jealousy of the neighbor republic, Costa Rica. Personal observation inclines me to the opinion that the former estimate is nearer the mark. Forty thousand inhabitants

are claimed for the city of Leon, and the size of the place and the number of persons generally found in a house seem to justify the claim. Granada, Managua and Masaya are all important centers of population, and the west coast, from Leon to Rivas, a distance of considerably more than 100 miles, is comparatively thickly peopled. Parts of Chontales and Segovia are also thickly settled, while Matagalpa, inhabited almost entirely by Indians of Aztec descent, is said to be the most populous district in the country. According to the latest estimate furnished by the Bureau of American Republics at Washington the population is 420,000.

The people consist of whites, Indians, negroes, ladinos (crossed Indians and whites), zambos (crossed Indians and negroes), and mulattoes. The whites are most numerous and the negroes very rare on the west coast. The Indians of the west coast and of the interior are pure Aztecs. On the east coast are several tribes known from each other as Pantasmas, Payas, Carcas, Mosquitoes and Caribs, all more or less related, but entirely different from the Aztecs. They are generally of darker com-

plexion, not so good-looking, and smaller in stature. They are as a rule pacific, amiable, fond of fun, full of humor, and extraordinarily honest. Many of them make a business of carrying packs through the dense forest between the seaboard and the interior, or of transporting goods in canoes along the rivers, and it is said that they are often intrusted with money and bullion in amounts that would constitute fortunes they could never hope to acquire by industry, yet they have never been known to prove recreant to their trust.

Zambos or negroes are so common on the Atlantic coast that among the whites living there the opinion is very general that Carib is only another name for negro. One might as well confound the Indian and the white man. I have already referred to a difference between the Indians of the east and west coasts. They are, in fact, of distinct races. An acute observer has pointed out that while the Indians of the west coast, like those of Peru and the aborigines of Mexico, Cuba and Hayti, are without exception maize eaters, the staple food of east coast Indians, as well as those of Porto

Rico and the West India islands to the southward, is a flour made from the roots of the mandioca (*manihot aipim*). These yam-eating Indians are the descendants of the nomadic and warlike Caribs, who, this authority holds, had their origin in Venezuela, or thereabout. The maize eaters, on the other hand, have been for ages an agricultural and pacific people, gathered in cities and towns, and in places highly civilized. These he thinks, had their origin in the remote past on some now submerged island of the Pacific adjacent to the American coast.

The Indians of the west coast are an amiable, polite, industrious and interesting people. Their frugality and sobriety are admirable, and their fondness of fun is positively infectious. In company with a very blonde friend, who, on account of the color of his hair, excited the unbounded admiration of the natives, I went fishing one day at a place called St. Jorge, on the west shore of Lake Nicaragua. A group gathered around and wonderingly watched me adjust my fishing rod. One of the number asked what I would use for bait, and

not being able to answer him in Spanish, I pointed to my companion, meaning to indicate that he had the bait in his pocket. The sign was interpreted that I intended to make bait of my companion, and the whole party went off into a fit of immoderate laughter.

Their industry is of the most painstaking and, in many instances, unthinking character. They do things because their forefathers did them, and consequently waste much time in slow and antiquated methods. For example, it has been a matter of much difficulty to induce them to use machine-sawed lumber, because it has for generations been customary with them to cut lumber with the antiquated whip-saw. Their fondness for flowers is remarkable. The women and young girls generally have a blossom of some kind in the hair, and in the Indian city of Masaya every house has a flower garden beside it. "The love of flowers is another beautiful trait of the old Indians that their descendants have not lost. The ancient Mexicans decorated their altars and temples with flowers, and in their festivals crowned themselves with garlands."

The history of the Spanish conquest of Nicaragua, like that of the conquest of Mexico and Peru, forms one of the blackest pages in the annals of the human race. The shocking cruelties perpetrated on a peaceful and unresisting people, in many respects more enlightened than the invaders must forever remain a reproach to the nation which sent forth those ruthless marauders. As for the marauders themselves, language furnishes no adequate terms to characterize their infamy. They found the country densely peopled and at once set to work to depopulate it. They enslaved the whole people; transported them by thousands to Panama and Peru; goaded those who remained by every species of oppression, or slaughtered them outright with a ferociety rarely exhibited except by beasts of prey. Although the country abounded with wild animals, their wanton disregard of human life led them to murder the young men, and feed their flesh to the dogs. When human life was held so cheap, it is not surprising to read in the chronicles of the priests who looked after the spiritual welfare of those monsters of iniquity,

that young women were openly bartered, each for a single strip of bacon. And with amazing hypocrisy all of those atrocities were committed in the name and under the sanction of Christianity.

The country was discovered by Columbus, who sailed along its eastern coast in 1502 In1521 Gil Gonzales de Avila set out from Panama with one hundred men and four horses. He landed at the Gulf of Nicoya, on the Pacific coast of Costa Rica, and penetrated the country from the south. He first encountered a chief, after whom the gulf was named, who received him hospitably and, with his people, six thousand in number, embraced Christianity. Three hundred miles further north he came to the great city of Nicaragua, which occupied the site of the existing city of Rivas, and is said to have contained a million inhabitants. It and the surrounding country were ruled by a chief of the same name, who, having heard of "the sharpness of the Spanish swords," appears to have temporized with Gonzales. He received him with a show of hospitality and presented him "with much gold, equal to 'twenty-five

thousand pieces of eight,' and garments and plumes of feathers. He asked the Spaniards many shrewd questions about the flood, and about the sun, moon and stars; their motion, quality and distance; what was the cause of night and day, and the blowing of the winds? how the Spaniards got all their information about heaven, who brought it to them, and if the messenger came down on a rainbow? We are told that 'Gonzales answered to the best of his ability, commending the rest to God.' Probably his interrogator knew more of the visible heavenly bodies than he did, for Nicaragua was of the Aztec race, a people who knew the true theory of eclipses, and possessed an astronomical calendar of great accuracy."*

However, about fifty miles further north, in the neighborhood of Masaya, ruled another powerful chief, named Diriangan, who was not hospitably inclined, and whose threatening attitude forced Gonzales to retire from the country. But the account he carried back to Pedrarias, the governor of Panama, of the richness of the country, so excited the cupidity of the

*"The Naturalist in Nicaragua."—Thomas Belt.

latter that a large force was collected and sent out in the following year, under Hernandez de Cordova, to conquer Nicaragua and Diriangan. It is amazing that a densely populated country, several hundred miles in extent, should have been overrun by a mere handful of adventurers, whatever their superiority of arms, when sheer weight of numbers would have been sufficient to crush them. However, Hernandez succeeded in his mission, founded Leon and Granada, and reared to himself and his successors an everlasting monument of atrocity.

The country was annexed to the province of Santo Domingo, and Pedrarias was made the first governor. He and his son-in-law, Rodrigo de Contreras, who succeeded him, distinguished themselves by the exercise of every cruelty that a devilish ingenuity could suggest. One stroke of retributive justice crosses, like a flash of light, that black and bloody phase of inhumanity. Hernandez and Pedro, sons of Rodrigo, who succeeded him in the governorship, revolted against Spain in 1549, and proclaimed the independence of Spanish America. Although successful in gaining possession of

Panama, they were defeated and executed in 1550. Thus, though by no means adequately, were the wrongs of the defenseless Aztecs partially avenged. But that was, after all, a meager satisfaction, for their successors were, as a rule, no better than they. Nicaragua had previously, in 1541, been constituted, with the rest of Central America, into a separate government; but after the suppression of the revolt it was attached to the *audencia* of Guatemala.

For nearly three hundred years the country, so far as the poor Indians were concerned, enjoyed the quiet of "a calm despair." True, it was subject to occasional incursions of the buccaneers, but these, it may be taken for granted, were directed more against their oppressors than themselves, and consequently must have been a source of melancholy satisfaction to the oppressed people. In 1821 Nicaragua and the other Central American States, joining hands with Mexico, threw off the Spanish yoke and became a part of the Mexican Empire, established by Iturbide. Iturbide's career was brief, however, and on his downfall, in 1823, Nicaragua was constituted one of the five States of the

Central American Confederation. That confederation lasted with little more than a semblance of government until 1839, when each of the component States became separate nationalities. A period of unrest followed, characterized by internal disorders and frequent collisions with neighboring states.

In 1847 the government became involved in a dispute with Great Britain over the control of the Mosquito, or Atlantic coast, that lasted for a year and resulted in the seizure by that power of San Juan del Norte, which the English renamed Greytown, in honor of Earl Grey. More than a century before the English had effected a lodgment on the Mosquito coast, and in 1825 one of the native chiefs was crowned king of the Mosquito tribes at Belize, in British Honduras. At his death, he appointed the British agent at Belize regent of his kingdom, and by virtue of that appointment the British government afterward claimed a protectorate over the entire coast. But for the interference of the United States government, that protectorate would in all probability have been exercised indefinitely. The discovery of gold in California and the

establishment by citizens of the United States of a transit line to the Pacific by way of the San Juan River, gave this country a practical interest in the controversy between Nicaragua and Great Britain, and opened the negotiations which resulted in the signing at Washington, July 4, 1850, of the Clayton-Bulwer treaty. Although that treaty conceded to Great Britain a great deal more than she was entitled to, namely, a voice in the building of any ship canal across the continent at Nicaragua, it put an end to the disputes between the three countries. A subsequent treaty between Nicaragua and Great Britain, signed at Managua in 1860, conveyed the protectorate of the Mosquito coast to Nicaragua, and constituted Greytown a free port. The king of the Mosquitos was also bound by the treaty to recognize the sovereignty of the republic and to confine himself to the exercise of purely administrative authority. In consideration of the relinquishment of his sovereignty, the republic was to pay him $5,000 annually for ten years. However, on his death in 1864, the republic refused to recognize his successor and stopped the payments.

The Mosquito coast embroglio was, however, the least serious of the troubles that Nicaragua passed through in the period between 1839 and 1860. In 1854 began a protracted civil war which lasted until 1858. It was really a struggle for ascendency between democracy and the aristocracy. Democracy finally triumphed, as much as it is possible for democracy to triumph in a Spanish American community. The people secured a measure of civil if not complete political liberty. Two governments were set up; that of the democrats at Leon; the other of the aristocrats, at Granada. In an impulse of misplaced confidence the democrats invited to their assistance Colonel William Walker, a native of the United States, at that time a resident of California. He landed in Nicaragua with a few adventurous followers, and speedily made himself master of the country. It has been charged that Walker's real object was to establish a slave-holding republic in Central America, but I do not think a dispassionate view of the facts warrants that conclusion. The truth of the matter appears to be that Walker was a purely selfish and rapacious

adventurer, who was moved less by principle than by a desire for power and plunder. His treachery to his friends, his seizure of the property of the Central American Transit Company, his wanton destruction of Granada, and many other excesses, all go to justify this view of his character. It is true that the destruction of Granada was actually accomplished by one of his lieutenants, an Englishman named Henningsen, who, in a spirit of unbridled malignancy, caused to be inscribed on one of the ruined walls: "Here was Granada." But there is little room for doubt that the destruction was sanctioned if not planned by Walker. Walker was finally driven out of Nicaragua by a coalition of the Central American republics. Subsequently he attempted to return to the country, but was intercepted by a United States war vessel, and turned over to the Honduran authorities, by whom he was shot.

After the expulsion of Walker, differences with Costa Rica arose, which delayed the withdrawal of the troops of that republic from Nicaraguan territory. A settlement of these was effected, however, in 1858, and the country was

really at peace for the first time in nearly twenty years. A new constitution was adopted and permanent government established, with the election of a president in 1859. From that time to the spring of 1893, with the exception of a promptly quelled insurrection in 1869, the country enjoyed uninterrupted peace, in which respect it enjoys an honorable distinction from every other Central and South American State. The first president elected under the new constitution was General Martinez, who served two terms, and was succeeded in 1867 by Fernando Guzman. The subsequent presidents were: Quadra, 1871-5; Chamorro, 1875-9; Zavala, 1879-83; Cardenas, 1883-7; Carazo, 1887-90. President Carazo died before serving his full term, which would have expired in 1891. He was succeeded by Dr. Roberto Sacasa, under the prescribed form referred to at the beginning of this chapter. Sacasa was elected for a full term in 1891, in spite of a good deal of opposition, based on the fact that an amendment to the constitution adopted since the time of Martinez, disqualifies a man from serving more than one term. His

opponents claimed that this provision applied equally to the incumbent of an unexpired term as to the incumbent of a full term.

The dissatisfaction with Sacasa, which was very evident and outspoken at the time of my visit in the spring of 1891, culminated in a revolution in April, 1893, by which he was deposed, and General Joaquin Zavala, of Granada, the leader of the conservative party, installed in his place. However, the new government was very short-lived, for in July of the same year Zavala was overthrown by the Leonenses, under Zelaya and Ortiz, who proclaimed themselves respectively president and vice-president. Zelaya has held office ever since, having been elected (?) for a full term in 1897. In the fall of 1894 he violated the treaty with Great Britain, above referred to, and took forcible possession of the Mosquito coast, deposing the so-called king.

Meanwhile a movement was set on foot in Nicaragua and the adjoining republics of Honduras and Salvador for the formation of a greater republic of Central America. This resulted on June 20, 1895, in the signing of a treaty at

Amapala, in Salvador, by representatives of the three first-named republics, as well as of Guatemala and Costa Rica, by which the five states were consolidated into one government, to be presided over alternately for a year at a time by the president of each of the constituent republics. Costa Rica and Guatemala, however, afterward declined to enter the union, but a semblance of federation was kept up for a time by delegates of the other three countries, who resided for awhile at San Salvador and afterward at Managua. These delegates, who constituted what was called a diet were Fiallas of Honduras; E. Mendoza, of Nicaragua, and Dr. J. Castellanos, of Salvador. Under their auspices a constitution was drafted, looking to a more coherent union, and the confederation was called the United States of Central America. That constitution was proclaimed at Amapala on November 1, 1898, and Dr. Salvador Callego, of Salvador; Miguel Agnelugarte, of Honduras; and Dr. Manuel Corrolel Matus, of Nicaragua, were named to exercise the governing power until March 14, 1899, when they were to elect a president. Within a few days, however, a revo-

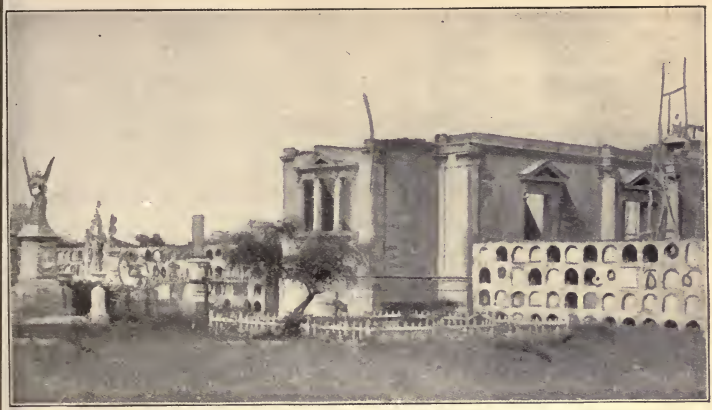
lution broke out in Salvador, and on November 30th the union was formally dissolved.

In spite of her internal troubles Nicaragua appears to have prospered, for President Zelaya, in his message to congress, January 1, 1896, announced that the foreign debt of $379,-379.20 had been paid off, while $2,157,446.63 had been paid on the domestic debt, of which only $1,425,000 remained. That, he calculated, would be liquidated in three years more.

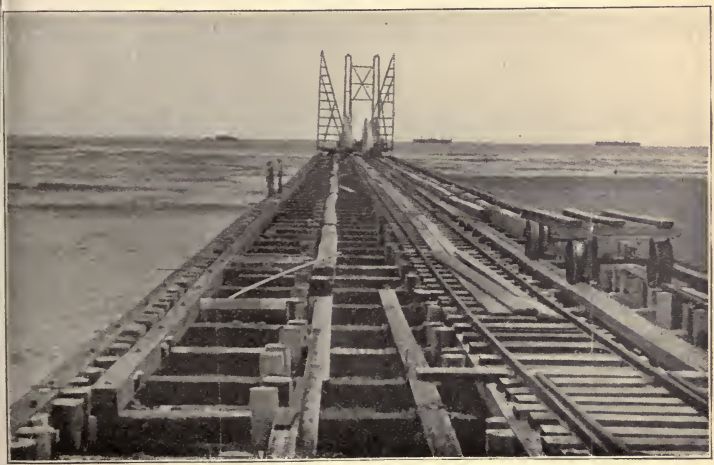
CHAPTER III.

THE GREAT WATERWAY.

NICARAGUA has long claimed the attention of maritime nations on account of the facilities it offers for the building of a ship canal to connect the Atlantic and Pacific Oceans. The want of such a communication was felt much further back in the history of civilization than is generally suspected. In truth it was the impelling force that, four hundred years ago, started Columbus out to search for a western passage to the Indies, and so led to the discovery of the new world. Long before the American coast was thoroughly explored, the San Juan River was fixed on as offering a possible way of connecting the two oceans. This suggestion was made by the Portuguese, Antonio Galvao, as far back as 1550. In the interim other routes have been advocated, but careful surveys made by the United States government demonstrated



CEMETERY IN GRANADA



THE BREAKWATER, GREYTOWN, LOOKING SEAWARD

almost a decade before the disastrous attempt at Panama, that the Nicaragua route was the only practicable one. The subject was first officially considered by the United States government in 1825, when Señor Cañaz, the minister to Washington from the Central American Confederation, addressed a note to Mr. Clay, then Secretary of State, inviting his attention to the advantages of the San Juan River and Lake Nicaragua for the construction of a canal. Except, however, that Mr. Clay instructed Mr. Williams, the United States chargé d'affaires in Central America to ascertain if surveys had been made and if confidence could be placed in their accuracy, no action was taken by the government.

Private enterprise was also about the same time first directed to the matter, and in June, 1826, A. H. Palmer, of New York, who had associated with him De Witt Clinton and other prominent men of the United States, secured a contract from the government of Central America to build a canal through Nicaragua "for vessels of the largest burden possible." Although they proposed to do the work with only

$5,000,000, they failed to raised the money, and so the enterprise was abandoned. The next agitation of the subject was made by the King of the Netherlands, who organized an association of capitalists, and in March, 1829, sent an envoy, General Ver Veer, to Central America to secure the requisite concession. The Central American Congress voted in the following year to grant the concession, but the disruption of his kingdom forced the king to relinquish the project.

The question was revived from time to time in various ways. In 1835 the United States government ordered Colonel Charles H. Biddle to inspect the several proposed canal routes, beginning with that of Nicaragua. Colonel Biddle went to Central America, but did not make the inspection. Two years later the Central American government employed Lieutenant John Bailey, a retired British naval officer, who had for some time been a resident of Nicaragua, to make surveys for the proposed canal. Lieutenant Bailey's appear to have been the first actual surveys, but they were confined chiefly to the country between the lake

and the Pacific. He made many maps and drawings, which were, in 1839, placed at the disposal of John L. Stephens, who was sent on a special and confidential mission to Central America by the United States government. From Lieutenant Bailey's data, Mr. Stephens estimated that the canal would cost $25,000,000. The government of Nicaragua sent Don Francisco Castellon to France in 1844, to invite Louis Philippe to exercise a protectorate over the country and develop the canal project. But the tottering King of France needed a protectorate himself at that time, and so could not give his attention to matters away from home. Don Francisco, however, sought the co-operation of Louis Napoleon, then a state prisoner at Ham, and in 1846 the Nicaraguan government authorized the future emperor to organize a company to construct the canal and call it "Le Canale Napoleone de Nicaragua." The prince caused a pamphlet on the subject to be published over his name, but after his escape from prison paid no further attention to the matter.

The acquisition of California by the United

States government gave the project a new importance to the people of this country, and stimulated efforts to secure concessions. In 1849, Elijah Hise, United States chargé d'affaires in Central America, without instructions, negotiated a treaty with Nicaragua for free transit across her territory, but his government disavowed the act. In September of the same year E. G. Squier, who succeeded Mr. Hise as chargé d'affaires, secured for the late Commodore Vanderbilt and his associates a concession for a canal and collateral privileges for the establishment of a transit line to the Pacific. The transit line was speedily established by means of steamers on the San Juan River and the lake, and stage coaches from La Virgen, on the west shore of the lake to San Juan del Sur, on the Pacific. One of the steamboats employed by the company is still in use on the river, and for a part of the distance between La Virgen and San Juan del Sur, remains in good preservation, a fine macademized road built for the stage coaches. Up to the completion of the Panama railroad, the Central American Transit Line did a tremend-

ous business, and many of the early settlers went to California by this route. The late General William T. Sherman was among those who made their first trip to California by way of the San Juan. But, although they reaped large profits from the transit line, nothing was done by Commodore Vanderbilt and his associates toward building the canal, except that they caused a survey of the route to be made by Colonel O. W. Childs, of Philadelphia, who earned the distinction of pointing out the lowest divide on the Pacific coast between Alaska and Cape Horn. This divide is only a few miles north of La Virgen, and there the crest of the ridge between the lake and the Pacific is only 153 feet above the level of the ocean. Colonel Child's survey, a record of which has been preserved, was the first thorough instrumental examination of the whole route.

Besides securing the concession above referred to, Mr. Squier negotiated a treaty covering the construction of the canal, which was approved by President Taylor and submitted to congress, but owing to the intrigues of the British Minister at Washington, Sir Henry

Bulwer, it was never acted on. In 1858 the concession to the Transit Company was declared forfeited for non-compliance with the conditions, and Nicaragua and Costa Rica jointly conferred on Felix Belly, of Paris, a concession for the construction of a canal by the route surveyed by Childs. The concession lapsed, however, before M. Belly succeeded in raising the capital required. Meanwhile the United States government, having been apprised by the negotiations incident to the Clayton-Bulwer treaty of the importance attached by Great Britain to the project, had begun a systematic survey of all the proposed canal routes across the isthmus. This work was begun in 1852 and continued, with some interruption, until 1880. The Nicaragua route was surveyed in 1872-3 by Commander E. P. Lull, U. S. N., and A. G. Menocal as chief engineer, who made an exhaustive report on it. President Grant, in 1872, appointed General A. A. Humphreys, Chief of Engineers, U. S. A., Captain C. P. Patterson, Superintendent of the Coast Survey, and Admiral Daniel Ammen, U. S.N., a commission to examine the various

surveys, and report on "the subject of inter-oceanic ship canal communication." The examination was narrowed by elimination to eight routes, which were all that were deemed worthy of notice. The length of these, with the altitude of their divides, was ascertained to be as follows:

Tehuantepec, length, 150 miles, altitude, 855 feet.

Nicaragua, length 169 miles, altitude 153 feet.

Panama, length 41 miles, altitude 295 feet.

San Blas, length 30 miles, altitude 1,145 feet.

Caledonia-Tuyra, length 87 miles, altitude 1,008 feet.

Atrato-Tuyra, length 115 miles, altitude 800 feet.

Atrato-Truando, length 125 miles, altitude 950 feet.

Atrato-Napipi, length 180 miles, altitude 778 feet.

The commission reported that the Nicaragua route "possesses, both for the construction and maintenance of a canal, greater advantages and offers fewer difficulties from engineering,

commercial and economic points of view than any of the other routes shown to be practicable."

Admiral Ammen and Engineer Menocal, who were appointed by the President delegates from the United States government to the International Canal Congress, held in Paris in 1879, advocated the Nicaragua route, but the adoption of a resolution to the effect that a canal of uniform level should be constructed, limited the selection of a route to Panama, where a commission reported such a canal to be possible. The Panama project was from its inception pronounced in this country, impracticable, and after the return of the delegates from Paris, a Provisional Interoceanic Canal Society was organized here by Captain S. L. Phelps, General U. S. Grant, Admiral Ammen, General George B. McClellan, Vice-President Morton and others. Mr. Menocal secured for that society a concession for the construction of a canal from the Republic of Nicaragua, in May, 1880, and in December, 1881, Senator Miller, of California, introduced into the United States Senate a bill to lend the

aid of the government to the construction of the canal. This bill, like a similar one introduced into the House of Representatives two years later, by Mr. Rosecrans of California, was actively opposed by Panama Canal and Tehuantepec Ship Railway interests, and eventually shelved without a vote. The house bill was finally taken up as unfinished business, but although there were 126 votes in its favor to 76 against it, it failed for want of the requisite two-thirds majority. Meanwhile the Provisional Society had been merged into a corporation called the Maritime Canal Company of Nicaragua, and as government aid was despaired of a syndicate of capitalists was formed, which, with the co-operation of Generals Grant and McClellan, was to undertake the construction of the canal. The failure of Grant & Ward in May, 1884, however, unexpectedly overturned these plans, and the concession held by this company, like those which had previously been granted, lapsed for non-fulfillment of its conditions.

Nevertheless, a movement was already far advanced in another direction to revive the

project. Mr. Blaine, as Secretary of State, had opened the way, and his successor Mr. Frelinghuysen had followed it up, to negotiate a treaty under which the United States government was to undertake the construction of the canal as a public work. Such a treaty was concluded and submitted to the United States Senate in December, 1884. It was not brought to a vote until January 29, 1885, when it failed of ratification for lack of a two-thirds majority. A motion to reconsider having been entered, the treaty remained before the senate, but early in President Cleveland's administration it was withdrawn for further executive consideration, and was not again submitted to the senate. This brings the history of the negotiations down to the point at which the movement began that resulted in beginning the actual construction of the canal.

A discussion of the subject by the American Geographical Society, in New York City, was brought about early in 1886, by Commander H. C. Taylor, U. S. N., with the co-operation of the society's president, Judge Charles P. Daly. That discussion resulted in the forming

of an association of prominent men in October 20th of the same year, to secure a new concession from the government of Nicaragua, and to organize and incorporate such companies as were necessary to accomplish the work. Under an Act of Congress, approved February 20, 1889, the Maritime Canal Company of Nicaragua was organized on May 4th of the same year. The incorporators named in the act were Frederick Billings, Charles P. Daly, Daniel Ammen, Francis A. Stout, Horace L. Hotchkiss, Edward F. Beale, Hiram Hitchcock, C. Ridgely Goodwin, A. C. Cheney, J. F. O'Shaughnessy, H. C. Taylor, J. W. Miler, A. S. Crowninshield, A. G. Menocal, C. H. Stebbins, T. Harrison Garrett, Jules Aldigé, R. A. Lancaster, A. E. Mills, G. E. Kissell, H. Fairbanks, George H. Robinson, A. B. Darling, J. E. McDonald, James Roosevelt, Christian Devries, F. E. Thompson and Henry Parr. Soon after the Nicaragua Canal Construction Company was organized to do the work under a contract with the Maritime Canal Company, Hiram Hitchcock was elected president of the Maritime Company, and has filled the office up to the present time.

The first president of the Construction Company was Francis A. Stout, the second; A. C. Cheney. The latter was succeeded, on March 5, 1890, by ex-United States Senator Warner Miller, who afterward directed the work on the canal.

One of the first acts of the preliminary association was to send Mr. Menocal to Nicaragua to treat for a new concession. This was speedily arranged, ratified by the Nicaraguan government, April 24, 1887, and according to one of its conditions, made binding by the payment within sixty days thereafter of $100,000 to the government, to be forfeited in case work should not be commenced, but to be applied on account of police protection if the work was carried on. The boundary dispute between Nicaragua and Costa Rica made it expedient to secure a concession from the latter republic also, and one embodying all that the association desired was negotiated by Mr. Menocal and ratified by the Costa Rican Government, August 9, 1888.

All of this preliminary work was, of course, accomplished before the incorporation of the

Maritime Company. The association, meanwhile, did not confine itself to negotiations. Mr. Menocal was appointed Chief Engineer, and in November, 1887, R. E. Peary, as subchief engineer, was sent with an engineering corps to Nicaragua to locate the route of the canal and make the final surveys. The corps consisted of six land parties, one hydrographic party and two boring parties, and embraced about forty-five engineers, rod and chain men, and one hundred laborers. It reached Greytown on December 9th, and at once set to work. It was shortly after joined by Mr. Menocal, and was reinforced from time to time as the work progressed.

Two facts must be briefly noted before proceeding to describe the work accomplished. In August, 1890, one, A. L. Blackman, who claimed to have some rights in conflict with the canal, procured the introduction into the National House of Representatives of a bill to repeal the charter of the Maritime Canal Company, but that attempt to embarrass the company resulted only in a confirmation of its rights. The Committee on Commerce, to which the

bill was referred, within a few days presented an adverse report, which concluded as follows: "It would be a gross breach of faith for the United States government to permit in any way the embarrassment of the project by considering unfounded propositions from any source for the repeal of the company's charter. When completed, as we have no doubt it will be at the earliest possible date, it will prove of greater importance and benefit to the United States than any other similar work in our history. It will make the Atlantic and Pacific coasts substantially one and be of incalculable advantage in the development of the trade of California, Oregon and Washington."

The other fact referred to was the introduction into the United States Senate by Senator Sherman on January 10, 1891, of a bill giving the government guarantee to the principal and interest, at four per cent. per annum, of $100,000,000 of bonds to be issued by the Canal Company for construction purposes. It required $70,000,000 of the capital stock of the company to be placed in the custody of the Secretary of the Treasury, to secure the repayment of any

amounts advanced by the government, which was also given an option to purchase the whole of this stock at any time before the maturity of the bonds. The President was authorized to appoint six of the company's directors, and the Secretary of the Treasury was given the power to vote at his discretion on the stock in his keeping. This bill was originated by the Senate Committee on Foreign Relations, without any solicitation or suggestion on the part of the men who had undertaken the work of building the canal, but these, although the bill practically proposed to deprive them of the profits of their venture, consented to accept its provisions in view of the national character and importance of the enterprise. However, pressure of other, and at the time more engrossing, public business, delayed action on the bill until the closing days of the session, and then Senator Sherman gave notice that, because of lack of time for sufficient discussion, it would not be called up for further consideration at that session. The failure of the senate to act on the measure restored the company to its previous status, and it proceeded at once to demonstrate

to the capitalists of the world the feasibility of the enterprise. With this end in view President Warner Miller, of the Construction Company, with a party of engineers and capitalists, visited Nicaragua in April, 1891, and made a personal inspection of the work accomplished and of the entire route of the canal.

The work done may conveniently be considered, according to its kind, under four different heads. First, in the order of its prosecution, come the surveys and location of the route; second, the establishment of a plant and the erection of buildings; third, the improvement of the harbor of Greytown; fourth, the actual work of construction. An accurate knowledge of the topography and physical structure of the country through which the canal is to pass was an essential prerequisite to the commencement of the work of construction. That knowledge could be acquired only by careful and elaborate surveys of the proposed route. The fundamental mistake made by the Frenchmen at Panama was in plunging into the work without making themselves acquainted with the difficulties they would have

to encounter. Had they made in advance a careful examination of the proposed route, they never would have found it necessary, before the work was very far advanced, to change their plans from the construction of a canal of uniform level to one with locks, or have become involved in the hopeless task of cutting through a mountain of unstable clay and sand. The importance attached by the managers of the Nicaragua Canal to a thorough survey of the route, is shown, not less by the fact that this branch of the work was steadily prosecuted for nearly three years and a half, than by the still more striking fact that, although the actual cutting required for the canal is only about twenty-six miles, the surveys, including cross sections, location of locks, dams, embankments, railroads, flowage lines, etc., aggregate fully 4,000 miles.

Besides this thorough examination of the surface of the country, the boring parties made an exhaustive inquiry into the character of the soil and the underlying rock over the entire route of the canal. One of the most important results of this vast preparatory labor is that ac-

curate calculations can be made of the cost of excavating the material to be taken out of the cuttings. The difficulties encountered in carrying out this work were of the most formidable nature. The men had literally to cut their way, with ax and machete, through an otherwise impenetrable forest. It many places they were forced to struggle over a miry soil, or work in water up to their armpits. They were also exposed to drenching rains daily during six months of each year. It is a conclusive proof of the healthfulness of the climate that, although these men slept on the ground, without shelter, when on the march, or on cots or cane beds, in tents or rudely constructed buildings, when in camp, there was not a single death, nor even a case of serious illness, during the three years and a half in which the surveys were carried on. The men were, of course, well fed and subjected to strict sanitary rules, the more noteworthy of which were, that each day's work was preceded by a cup of strong coffee and followed by the exchange of wet clothing for dry.

The first construction party, consisting of

forty-seven engineers and their assistants, was sent out from New York on May 26, 1889. It arrived at Greytown on June 8th, and at once began the erection of a working plant. At that time there was no entrance from the ocean to the harbor of Greytown. The supplies and material required in the prosecution of the work had either to be landed upon the unprotected beach, from vessels anchored two miles away, in the open ocean, or carried in lighters through the mouth of the Colorado, twenty miles below, and thence by a tortuous and narrow creek to the town. The heavy swell constantly thrown on the coast by the strong northeast tradewind made the landing of weighty machinery an especially tedious and dangerous undertaking. Nevertheless these obstacles were overcome without accident, and before the end of the summer much material was accumulated on the spot. The labor supply at Greytown was altogether inadequate to the requirements of the company, and it was forced to import negro laborers from the island of Jamaica.

Still, by the end of 1890, an active working

force of about 2,000 men was collected along the line of the canal.

The erection of wharves, storehouses, machine shops and buildings for the accommodation of the officers and laborers was the first work that engaged the construction party after its arrival at Greytown. By the terms of the concession, the company was to acquire whatever land it needed for buildings and the purposes of construction, in the case of public lands without cost, and in the case of private lands at the expense of expropriation by the government. A site bordering the ocean, at the northern end of the lagoon, which constitutes the harbor of Greytown, was selected, and there the required buildings were erected. This settlement, which is on both sides of the canal line and between two and three miles from Greytown, was called America. The hospital accommodations, embracing ten buildings; the officers' headquarters, eight buildings; the depot of general supplies, eight buildings, are north of the canal line. The machine shops and railroad headquarters, nine buildings, and the laborers' quarters, four buildings, are south

of the canal. In these five groups there are, irrespective of sheds, small outhouses, water tanks, etc., thirty-nine buildings, embracing 75,902 square feet of floor. The buildings are constructed of yellow pine from the United States, with corrugated iron roofs. The machine shop and smithery are equipped with the latest machine tools for making or repairing ponderous machinery, such as bridge machinery, stationary engines or locomotives. These shops are manned by an efficient corps of machinists from the United States.

The first important step taken by the company in the direction of actual construction of the canal was the improvement of the harbor of Greytown. Thirty years ago the San Juan River discharged into a capacious harbor, and there was a channel to the sea admitting the largest ocean vessels. But about 1866 the river changed its course to what is now called the Colorado mouth, twenty miles further south, the sea entrance to the harbor shoaled until it was barred by a beach four feet above high water mark, and Greytown was left on an inland lagoon. Chief Engineer Menocal's de-

duction from observations was that this beach was the result of the combined action of a northwesterly current, which sets strongly up the coast, and the northeast trade wind, which blows almost constantly, often at the rate of twenty miles an hour. The sand brought down to the sea by the San Juan is taken up by the current and forced inshore by the action of the wind. Mr. Menocal's plan for re-opening the harbor was to build a jetty or breakwater, at right angles to the shore line, 1,800 feet out to sea. This work was begun in October, 1889, at a point on the beach about a mile north of Greytown. It is forty-two feet wide and built of six parallel rows of piles, connected by stringpieces and girders. The spaces between the rows of piles were filled with brush and weighted with rock. When the breakwater had been pushed out 500 feet from the shore, the sea cut a channel along its northern edge into the harbor. This channel was soon about 500 feet wide, and it increased in depth as the breakwater was extended. At the same time the beach advanced seaward steadily on the south side of the breakwater

and gave that structure a revertment of solid land.

By the beginning of 1891, about 1,000 feet of the breakwater had been constructed, and a depth of about fifteen feet of water in the channel secured. Work on the breakwater had to be suspended about this time, however, in consequence of the failure of the supply of rock needed in its construction. A small quarry, accessible to boats, had been opened on Silico Lake, about fifteen miles from the scene of the work. It was foreseen at the outset, however, that this source of supply would not last, and by the time it failed, the railroad planned to parallel the canal for the transportation of material was far advanced toward the eastern divide, where the supply of rock is inexhaustible. After the building of the breakwater had passed the 600-foot limit, it became apparent that in order to protect the channel from the shoaling effect of eddies, it would be necessary to build another jetty parallel to the first. The second was located about 200 yards north of the first and constructed in the same manner. It had been advanced about 400 feet

when the supply of rock gave out, and had already shown its efficacy to keep the channel open. To prevent back-cutting, a wing-wall of sheet piling, about 700 feet long, was extended from the rear of the main breakwater into the lagoon. The piles are yellow pine from the United States, chiefly from North Carolina, and are thoroughly creosoted to protect them from the attacks of that destructive marine insect, the *teredo*. The harbor of Greytown is capacious and well protected. It is between two and three miles long by about one mile wide, and generally has a depth of ten to twenty feet. In some places the water is deeper, but the company proposes to secure by dredging a uniform depth of thirty feet over an area of 200 acres, which, with the enlarged section of the port reach of the canal, will give about 350 acres of harbor room for vessels of the largest draft. The first ocean vessel to enter the harbor after an interruption to navigation of nearly thirty years, was the steamship Sverdrup, on January 7, 1891.

Reference has already been made to the construction of a railroad. That work was begun

in the summer of 1890, and undertaken to meet the necessity for the establishment of a plant to do the heavy rock cutting in the eastern divide, about thirteen miles from Greytown, as well as for the transportation of other heavy material, notably the rock required for the building of the breakwaters. The difficulties in the way were unusual and demanded the exercise of ingenuity as well as extraordinary labor. The line was located in close proximity to the southern bank of the canal, and it cuts straight through the primeval forest that borders the coast. In addition to the formidable obstacle presented by the tangled vegetation and gigantic trees, which constitute the forest, the soil is miry for at least six miles from the harbor and wholly unfit for the construction of a road-bed. During the rainy season this part of the forest is flooded with water, from one to four feet deep. To meet the requirements of the case, a corduroy of heavy logs, floated, rolled, or dragged by hand to the spot, was built across the swamp, and upon stringpieces placed upon this the ties and rails were laid. As the rails were extended, sand taken from the canal ex-

cavation was run out on platform cars and dumped along the line of the road. This sand is heavy, coarse, and well suited to the purpose. By these slow and toilsome steps a substantial roadbed was built, the ties and rails being raised by degrees until the desired grade was established. At the beginning of 1892, eleven miles of the road had been completed. It is of standard gauge, laid with fifty-six pound American steel rails. At the harbor terminus of the road a substantial pier has been built, 264 feet long, and equipped with steam appliances for handling freight. Another accessory work of importance, begun soon after the arrival of the first construction party at Greytown, was the building of a telegraph line to connect with the government telegraph system at Castillo, sixty miles distant, and through that, with the Central and South American cable, which runs along the Pacific Coast and affords communication with the United States. The building of this telegraph line was a much more expensive and difficult work than would at first be supposed, as in order to protect the wires from falling timber, it was necessary to

BUILDING RAILROAD THROUGH SWAMP, CORDUROY WITH TIES AND RAILS LAID IN THE BACKGROUND

-LA FE, AND DREDGE "CITY OF NEW YORK," LOOKING EASTWARD

make a clearing through the forest 100 feet wide. The telegraph line was completed early in 1891.

We come now to the actual work of constructing the canal. No better illustration can be offered of the vast amount of preliminary work involved in a great undertaking than the fact that, even in this brief sketch of the history of the canal, so much space has of necessity been occupied in describing the preparatory steps. The actual work of construction was begun in January, 1890, with the clearing of the forest from the line of the canal. The clearing is 486 feet wide. Viewed from the deck of a vessel in the harbor of Greytown, it has the appearance of a grand avenue through the forest, affording a glimpse of the distant mountains. It has been carried to the foot of the hills about ten miles from the harbor. The forest will be fully described in a succeeding chapter. In this connection it will be sufficient to say that its chief characteristics are gigantic trees covered with tangled masses of vines and a dense growth of underbrush. After being felled, the timber and brush were burnt off the

clearing and the stumps blown up with dynamite.

In the fall of 1890 the plant of the American Contracting and Dredging Company, which had been purchased in the preceding summer, was transported from Aspinwall to Greytown. It included, among much other valuable property, seven powerful floating dredges. One of these was lost on the voyage, but the others reached Greytown in good order, and two of them, the City of Paris and M. A. Slaven, were shortly afterward set to work on the canal. These are really wonderful machines and merit a brief description. Each has forty-two huge iron buckets, traveling by an endless chain up and down an inclined ladder. The buckets have each a capacity for lifting a cubic meter of earth, but they actually lift only a cubic yard. They dump the earth excavated into a well about seventy-five feet above the deck of the dredge. Three eight-inch streams of water thrown into the well force the earth through a discharge pipe two feet in diameter and 200 feet long. The water runs off into the forest and the earth remains in an immense embank-

ment on the side of the canal. The ladder over which the buckets travel is raised or lowered by a mammoth crane and swung from side to side by guys worked on steam winches, so that the buckets can excavate at any angle. Each dredge excavates about fifteen cubic yards of earth a minute. Working abreast the two dredges named cut the canal, as they proceeded, to its full width, 280 feet. However, they cut only seventeen feet below the surface of the water, and as the required depth of water in the canal is twenty-eight feet, the remaining eleven feet will be cut by other dredges following behind these. About one mile of the canal had been opened at the close of 1891. At the same time about nine miles of the canal clearing had been made through the forest on the Pacific side of the lake.

A brief glance at the canal route in its entirety, before proceeding to consider the work remaining to be done, will give the reader a more comprehensive grasp of the subject. The distance from Greytown to Brito, the Pacific terminus of the canal, is 169½ miles. The actual

excavation required, however, is only $26\frac{3}{4}$ miles, of which $15\frac{1}{4}$ miles are between Greytown and the San Juan River, and $11\frac{1}{2}$ miles between the lake and the Pacific. The distance traversed by the canal to the San Juan is $31\frac{3}{8}$ miles, of which $16\frac{1}{8}$ will be through artificial lakes or basins. The course of the canal between the lake and the Pacific will also be through an artificial lake $5\frac{1}{2}$ miles long. For the major part of the distance between the two oceans, sixty-five miles of river and fifty-six miles of lake navigation will be utilized. Three locks, within thirteen miles of the Atlantic, will lift the canal 106 feet above the level of the ocean, and the natural incline of the river, which is three-fourths of an inch per mile from the lake to the point of junction, will raise it to the summit level, 110 feet. Three locks within $3\frac{1}{2}$ miles of the Pacific will lower it to that ocean. Thus the summit level of the canal will be $153\frac{1}{4}$ miles long.

Although a work of great magnitude, no insuperable engineering difficulties are presented anywhere along the route. The hardest part of the work lies in the eastern and San Francisco

divisions. The eastern division extends 18⅞ miles, from Greytown harbor to the western end of the eastern divide cut, and the San Francisco division, 12½ miles, through the basin of a river of that name, from the cut to the San Juan. For 9¼ miles, from Greytown harbor to the first lock, situated in the foothills of the eastern divide, the course of the canal is southwest across the flat alluvial coast lands, where the excavation will be made entirely by the floating dredges. This section of the canal, which will preserve the sea level, will have a surface width of 280 feet, a bottom width of 120 feet, a depth of twenty-eight feet and a waterway cross section of 5,712 square feet, or 2,012 square feet more than the cross section of the Suez Canal. All of the locks on the canal will be 650 feet long, eighty feet wide, and capable of receiving at the same time two vessels of 2,500 tons each. Lock No. 1 will have a lift of thirty-one feet; Lock 2, situated 1¼ miles further west, will have a lift of thirty feet, and Lock 3, 2¼ miles beyond the second, a lift of forty-five feet. Between Locks 1 and 2, the canal will be carried through an artificial basin

formed by damming the valley of a little stream, called the Deseado. A second basin is created by embankments above Lock 2, while above Lock 3 is formed an artificial lake about three miles long and from thirty to seventy feet deep. In the first two basins some excavation will be necessary in places to secure the required depth, but these, like the third, will afford ample room for the passage of ships in opposite directions.

The heaviest cutting along the whole line is through the eastern divide, at the western end of the artificial lake just spoken of. The ridge to be pierced, a spur of the main Cordillera, is 2.9 miles wide, and at its crest, which is, however, a mere "backbone," 298 feet above the level of the canal. The average cutting through the ridge is 141 feet to the floor of the canal, and it constitutes twenty-one per cent. of all the excavation required on the work. Excepting a comparatively thin overlying layer of earth, the material to be excavated is rock, which is indispensable in the construction of the breakwaters at Greytown, and the Ochoa and other dams in close proximity to the divide.

The labor involved can be greatly economized by utilizing ample water-power, near at hand on either side of the cutting, for driving the excavating machinery, furnishing electric lights, etc. West of the divide cut a series of embankments converting the connecting valleys of the Limpio, Chanchos and San Francisco, the Florida lagoon, and the valley of the Machado, into an artificial lake 12½ miles long, constitute the San Francisco division, which takes the canal into the San Juan River, immediately above the Ochoa Dam. This dam, which is to be built across the San Juan River, between two lofty hills, is to be 1,900 feet long and seventy feet high. It will raise the water of the river fifty-six feet, or to within four feet of the level of Lake Nicaragua, and afford slack water navigation to the lake. Some minor embankments will also have to be built across gaps in the impounding hills of the San Carlos, the Costa Rican tributary of the San Juan, which it joins a few miles above the Ochoa Dam. The San Carlos is the river which brings down from the Costa Rican mountains the silt that closed up the harbor of Greytown. The Ochoa Dam

will, by arresting its current, stop the discharge of silt, and, by backing up its water, extend navigation for many miles into the territory of Costa Rica. Ample provision will, of course, be made in the vicinity of the Ochoa Dam for the discharge by weirs and guard gates of the overflow of the two rivers.

The river division of the canal will have a surface width of from 500 to 1,500 feet. Some of the bends of the river will be improved by cutting away projecting promontories, and blasting and dredging to an avarage depth of 4½ feet will be necessary in some places over a distance of twenty-four miles, between the Toro Rapids and the lake. Dredging in soft mud to an average depth of ten feet, for fourteen miles in the lake from the head of the San Juan River, will also be necessary to secure a thirty-foot channel into deep water. Of the 56½ miles of lake navigation, more then forty-two are through deep water. Dredging will be necessary, however, for 1,400 feet from the west shore. Here also, two jetties, one of 1,800, the other of 2,400 feet, will be constructed to protect the entrance of the canal from the swell,

which is produced on this side of the lake by the trade wind.

The western division extends from the lake to the Pacific and covers 17.04 miles. The greatest elevation crossed here is forty-two feet above the level of the lake. The canal leaves the lake at the mouth of a little stream called the Lajas, about midway between La Virgen and St. Jorge, and passes through the depression pointed out by Colonel Childs in 1854. For the first 1½ miles from the lake it will have a surface width of 210 feet, and a bottom width of 120 feet. Through the succeeding five miles of deepest cutting, it will have a bottom width of eighty feet. Between the divide and the Tola basin it will have a bottom width of eighty feet and a surface width of 184 feet. The excavation will be chiefly through rock. The Tola basin will be 5½ miles long, one mile wide, and have a depth of water of from thirty to seventy feet. For 4½ miles it will require no work at all.

To create this basin, a dam 1,800 feet long and seventy feet high, will be constructed at a place called La Flor. The three locks on the

Pacific side will be situated close together near the La Flor Dam. The two upper locks will each have a lift of 42½ feet, while the lowest will have a variable lift of twenty-one to twenty-nine feet, according to the state of the tide. This last lock is situated 1¼ miles from the Pacific, and the intervening section of the canal will be 288 feet wide at the surface, and 120 feet wide at the bottom. The location of Brito is marked at the present time merely by a bight in the shore, formed by a rocky promontory which juts into the ocean at the north side of the mouth of a small stream, called the Rio Grande. From the extremity of this promontory a breakwater 900 feet long will be extended to the seven-fathom limit. Another breakwater 830 feet long will be built out from the beach to a point 800 feet distant from the sea end of the first, so as to inclose a considerable area of deep water. A broad, deep basin will also be excavated inland for 3,000 feet from the shore line, to give ample harbor room.

The estimated time for the transit of the canal by steam vessels is twenty-eight hours. The chief engineer's final estimate of the cost

of the canal is $65,084,176, but a board of consulting engineers, to whom the plans and official data were submitted in 1889, estimated that the cost would be $87,799,570. According to Mr. Menocal's calculations the canal will be able to carry annually 11,680 vessels, with an aggregate of 20,440,000 tons, which is more than double the present traffic through the Suez Canal. As the canal will save 10,753 miles for sailing vessels, and 8,267 for steamers, between New York and San Francisco, and 7,993 and 5,867, respectively, for the same craft between Liverpool and San Francisco, there can be no doubt that it will command a traffic equal to if not greater than that of Suez.

Work on the canal was stopped for lack of money in 1892, and in the summer of 1893 the Construction Company went into the hands of a receiver. It was subsequently reorganized, and an unsuccessful effort was made to raise the money needed abroad. Concurrently a movement was inaugurated to secure government aid, but the measure failed to go through Congress. However, in the Sundry Civil Appropriation Bill, passed in 1895, provision was

made for a government survey of the route with a view to ascertaining the cost of construction, and in accordance with that act President Cleveland appointed a board of survey, consisting of Lieutentant-Colonel William Ludlow, U. S. A.; Civil Engineer M. T. Endicott, U. S. N.; and Alfred Noble, of Illinois. The report of that board was inconclusive and unsatisfactory, and Congress subsequently appropriated $150,000 to continue the surveys. Under this provision President McKinley, in July, 1897, appointed Real-Admiral John G. Walker, U. S. N., retired; Captain Oberlin M. Carter, U. S. A., and Lewis M. Haupt, civil engineer of Pennsylvania, a board to complete the work.

This board, after an extended sojourn in Nicaragua, recently reported that the project was entirely feasible, but estimated that the cost of the canal will be fully $120,000,000, or nearly twice as much as Mr. Menocal's estimate. It also recommended a change in the eastern end of the route, by carrying along the delta of the San Juan River to avoid the heaviest cutting of the divide. Meanwhile a party of engineers and contractors, mostly of Chicago, made an

RAILROAD BRIDGE ACROSS BENARD CREEK

DREDGES ANCHORED ALONG THE WEST SHORE OF GREYTOWN HARBOR

examination of the route in the interests of a syndicate, which has since attracted attention by securing a new concession from the Nicaraguan government to date from October, 1899, when the concession of the Maritime Company expires by limitation. This party of surveyors arrived at the conclusion that the canal could be built for $100,000,000. The Cragin-Eyre syndicate, here referred to, is composed of some of the strongest capitalists in this country, and is understood to have at least $100,000,000 pledged to be put up at a few days' notice.

The memorable trip of the Oregon from San Francisco to Key West, at the outbreak of the war with Spain, has directed public attention to the necessity for a shorter waterway than the Straits of Magellan, between the Atlantic and Pacific coasts of this country, and forced the conviction that the canal should be built and owned by the United States government; and this conviction recently found expression in the passage by the Senate of a bill for that purpose and carrying the necessary appropriation.

At this writing it is impossible to foresee the fate of the bill in the House, but if it can be brought to a vote it will undoubtedly be passed.

CHAPTER IV.

FROM GREYTOWN TO THE LAKE.

ALTHOUGH much has been said about the harbor of Greytown, the town itself has so far claimed only an occasional reference. In appearance it differs widely from Spanish-American towns, the only point of resemblance being the plaza or public square. Except for the palms and other tropical trees about the houses and open places, it could readily be taken for a town in the southern part of the United States. The buildings are all of wood, one or two stories in height, painted white, with green blinds and brown roofs. Many of the residences are embowered by palms and tropical fruit trees, among which are the large-leaved bread-fruit, the orange and the mango. Others have around, or in front of them, pretty flower gardens, of which a conspicuous feature is a lovely creeper (*Antigonon leptopus*), with clusters of pink and rose-colored flowers. It

is called by the natives *la vegessima*, "the beautiful." The public square is covered with a fine greensward, and in it are many lofty cocoanut palms, which at the time of my visit, April, 1891, were loaded with ripening fruit. There are numerous stores, some of them large and well stocked, and prices are surprisingly low, which is explained by the fact that Greytown is a free port. There are two hotels, the Victoria and the San Juan. The former has better rooms, but the latter is preferred for its table. Other features of the town are a well-appointed club house and a horse railroad through the principal street.

The town is healthy, but not so cool as America, because there is a strip of woods between it and the beach, while the latter is open to the ocean. The population is about 1,500, including a considerable element of North Americans and Europeans, in addition to the usual mixture of Spanish-Americans and half-breeds common to other Nicaraguan towns. Gambling, chiefly in the form of keno, is openly carried on all day on Sunday in some of the saloons, and cock fights in the streets during the after-

noon are a favorable amusement. The principal festival is *Semana Santa*, "the feast of Holy Week," when a burlesque performance of the Passion Play is given in street pageants. Although until recently carried on under great difficulties much of the foreign commerce of Nicaragua has always been done through Greytown. A line of steamers on the San Juan brings down rubber, coffee, hides, dyewoods and other produce from the interior; there is a semimonthly line of steamers to New York; a coasting steamer connects at Bluefields with a weekly line of steamers to New Orleans; and a British mail steamer touches at the port once a month.

I have already shown by trustworthy statistics, that this part of Nicaragua is exceptionally healthy, but as there is a very general belief to the contrary in the United States, I may be permitted to quote the following testimony of a competent observer: "Perfectly level, surrounded by swamps, and without any system of drainage, either natural or artificial, excepting such as the sandy soil affords, Greytown might be thought a very unhealthy site for a

town. Notwithstanding, however, its apparent disadvantages, and that for nine months of the year it is subject to heavy tropical rains, it is comparatively healthy, and freer from fever than many places that appear at first sight better situated. Much is due to the porous sandy soil, but more I believe to what appears at first sight an element of danger, the perfect flatness of the ground. Where there are hills there must be hollows, and in these the air stagnates; while here, where the land is quite level, the trade winds, that blow pretty constantly, find their way to every part, and carry off the emanations of the soil. As a similar instance I may mention the city of Pernambuco, on the eastern coast of Brazil, containing 80,000 inhabitants. It is perfectly level, like Greytown, surrounded and intersected with channels of water, above the level of which it only stands a few feet.

"The crowded parts of the town are noted for their evil smells and filth, but, though entirely without drainage, it is celebrated for its healthiness; while a little lower down the coast, the town of Maceio, situated about sixty feet above

the sea, surrounded by undulating ranges, and with a good natural drainage, is much more unhealthy, fevers being very prevalent. As at Greytown, so at Pernambuco the trade winds blow with much regularity, and there are neither hills nor hollows to interfere with the free movements of the air, so that miasmatic exhalations cannot accumulate."* This is the testimony of a highly scientific man, who lived for several years in Nicaragua.

It has already been said that the Atlantic coast of Nicaragua is covered by a primeval forest which extends for many miles inland. At Greytown it presents the appearance of a lofty, greenish black wall, bordering the ocean as far as the eye can see. At America it comes down to within a few hundred feet of the beach. In the foreground is a fringe of brush made up to a large extent of the bush that bears the guava, from which the famous jelly is made. The fruit is about the size of a large plum, blended red and yellow, and consists of a pulp, containing small seeds of a sub-acid flavor. It is not much eaten, because the seeds occasion

*Belt, "The Naturalist in Nicaragua."

severe attacks of indigestion, though the pulp is said to be harmless.

Our party left America at 6:30 A.M. on Wednesday, April 8th, for a tramp through "Darkest" Nicaragua. There were about twenty of us, mostly New Yorkers, and although we could have gone all the way to the lake by steamer, we preferred, for the novelty and experience of the thing, a march on foot of forty miles through the forest. Though we had the advantage of Mr. Stanley at the start, in that we were able to make the first stage of our journey by railroad, he had the better of us in the end, as he was able to ride a mule, while we were compelled to foot it. The nature of the ground is such that no beast of burden except man can travel over it. The surface is cut up by numerous small streams, which have worn their channels into deep gullies from twenty to one hundred feet wide, with precipitious sides. A mule had been secured for the use of Senator Miller, who was the heaviest man in the party, but it soon was made plain that it would be about as easy for the senator to carry the mule as for the mule to carry the senator, so the

animal was left behind at the end of the railroad.

The first sight of a tropical forest fills the beholder with astonishment and admiration. The lofty trees, their trunks for many feet above the ground hidden in dense, luxuriant foliage, their tops concealed by festoons of trailing vines; the glowing patches of many-hued flowers; the glimpses of birds of gorgeous plumage, excite mingled feelings of wonder and delight. The most striking thing, however, is the extraordinary exuberance of vegetable life. Form upon form, one plant upon another, is the rule. Not only is the earth covered with vegetation, but the trees also. The giants of the forest are overloaded with parasitical burdens. "Numerous epiphytes—tillandsias, orchids, ferns, and a hundred others make every big tree an aerial garden. Great arums perch on the forks and send down roots like cords to the ground. Lianas wind round every trunk and hang from every bough, passing from tree to tree, and entangling the giants in a great network of coiling cables, as the serpents did Laocoon; the simile being strengthened by the fact that

many of the trees are really strangled in the winding folds. Sometimes a tree appears covered with beautiful flowers, which do not belong to it, but to one of the lianas that twines through its branchs and sends down great rope-like stems to the ground. Climbing ferns and vanilla cling to the trunks, and a thousand epiphytes perch themselves on the branches. Among these are large arums that send down aerial roots, tough and strong, and universally used instead of cordage by the natives.

"Among the undergrowth several species of palms, varying in height from two to fifteen feet, are common; and now and then magnificent tree ferns, sending off their feathery crowns twenty feet from the ground, delight the sight with their graceful elegance. Great broad-leaved heliconiæ, leathery melastomæ, and succulent-stemmed, lop-sided leaved begonias are abundant, and typical of tropical American forests. Not less so are the cecropia trees, with their white stems and large palmated leaves standing up like great candelabras. Sometimes the ground is carpeted with large

flowers, yellow, pink, or white, that have fallen from some invisible treetop above, or the air is filled with a delicious perfume, for the source of which one seeks around in vain, as the flowers that cause it are far overhead out of sight, lost in the great overshadowing crown of verdure.*

Another remarkable fact is that nearly every great tree is different from its neighbor. In nearly every instance their trunks rise to the height of more than a hundred feet without a limb. One tree of frequent occurrence has great radial, buttress-like roots, extending outward fifteen to twenty-five feet and merging in the trunk about twenty feet above the ground, so that it would be possible to build a good-sized cabin between any two of them. The natives say this tree is a species of fig, but I could not ascertain that it bears any edible fruit. Other large trees are the mahogany, a species of cedar (*Cedrela odorata*), from which the natives hollow their canoes and "bungoes;" the cortess, with a wood as hard as ebony; the nispera, whose timber is almost indestructible;

* Belt.

and another species of wild fig (*Castilloa elastica*), from which the rubber of Nicaragua is procured.

Our path followed the railroad clearing for a mile from the end of the road, and then plunged into the unbroken forest. The trail, if such it could be called, had been cut by a surveying party and afterward used occasionally by telegraph linemen, but vines and weeds and fallen trees had almost obliterated it, and but for our guides, members of the engineering and telegraph corps, we should have been hopelessly lost at the end of the first three hundred yards. As a matter of fact, the guides, armed with the machete—a knife with a broad, heavy blade three feet long—cut our path anew. The unbroken leafy canopy above completely shut out the sun's rays, or admitted them in occasional shafts, while a tangled mass of underbrush, vines, shrubs and small palms confined the view to a few feet on all sides. The soggy earth was broken by roots and logs that tripped our feet at every other step. A young member of the party, who had donned a white cotton suit for the march, was tipped over by one of

these hidden obstructions into a slough, from which he emerged a study in bronze. As we were leaving America, a light rain, the first of the season, began to fall. Those members of the party who had taken the precaution to provide themselves against the weather, enveloped in rubber coats, sat upon the unprotected platform cars and complacently pitied their short-sighted companions.

The rain continued to fall unceasingly until the party had been at least two hours on the march, but the owners of the rubber coats had not tramped half a mile before they lost all pride in their property, were glad enough to take the coats off, and subsequently aggrieved at the necessity of carrying them. Experience soon convinced us that it was useless to attempt any protection from the rain, for, protected or not, our clothes soon became wet. The perspiration flows so freely that one's clothing is saturated at the end of an hour's tramp whether it rains or not. The best attire, as we speedily discovered, for tramping through the forest, is stout woolen undercloth-ing and light overclothing. Cotton or linen

underclothing, when wet, becomes chilling as soon as exercise ceases.

The ravines I have mentioned as cut by the numerous streams, had been in many places bridged with felled trees by the engineers who first cut the trail, but so rapid, under the combined influences of shade and moisture, is the decay of everything without life in this deep forest, that few of the log bridges were capable of sustaining the weight of a man, though scarcely three years had elapsed since they were felled. However, even with dry shoes not made slippery by mud, and with less than twenty feet to fall, few men are able to walk a log without practice, so after some ludicrous attempts and narrow escapes, the majority of the party preferred alternate sliding down and climbing up steep banks. But in the tropics that is exhausting exercise, and many a pause was taken on the further bank in consequence. Of course with perspiration so active, thirst is incessant, and no drink devised by Yankee bartender was ever half so refreshing as a draught from one of those cool, limpid streams after an hour's struggling through the brush.

A steady rain, though not the characteristic down-pour of the tropics, fell till after nine o'clock, when the clouds broke, and during the remainder of the forenoon there were showers alternated with sunshine. Nevertheless there was a constant heavy patter of big drops from the overhanging leafy canopy. But, as we afterward discovered, for a steady thing, the rain is preferable to the sun on the march. The season was not the best for seeing the floral wealth of the forest, for the bloom is not at its height until the rainy season is somewhat advanced. However, the eye was frequently arrested by patches of purple, or scarlet, or crimson in the underbrush, while high overhead, from the white and leafless trunks of giant trees, orchids flashed like rubies or garnets set in emeralds. Often we walked over carpets of flowers, white, lilac, pink, or gold, strewn by invisible hands. These flowers are borne by trees whose lofty crowns overtop the leafy canopy and are, therefore, invisible from below, but viewed from some commanding eminence present great domes of color amid the rolling billows of green.

One of these large flowering trees is the cortess, already spoken of. About the end of March, having previously cast its leaves, it is entirely covered with brilliant yellow flowers. "The great yellow domes may be distinguished among the dark-green forest at the distance of five or six miles. Near at hand they are absolutely dazzling when the sun is shining on them."

The forest fairly teems with insect life. Every plant supports a tribe and every leaf is a populous community. The shrill metallic cry of the cicada bursts from a thousand tiny throats at the rustle of a bush or the crack of a dried branch. Large butterflies (*Morphos*), with lustrous, dark-blue wings, dart about out of reach overhead from branch to branch, while other species, black, red, yellow, and variegated, fly around you among the grass and shrubs. Marching columns of ants, bearing semi-circular strips of green leaves, several times larger than their bodies, file across your path. Great black ants (called locally the alligator ant), more than an inch in length, whose bite is more painful and serious than the

sting of the wasp, strut with pugnacious mein over logs and fallen leaves. Spiders of various size, from little ant-like creatures to great fellows with long bodies and longer legs, sit motionless behind their webs, or upon leaves, waiting patiently for unsuspecting insects. Immense wasps with long black bodies, banded with yellow, move busily about on foot or wing, and enormous beetles with grotesque bodies rush away from overturned logs and leaves. Yet the comparative scarcity of stinging flies and mosquitoes was surprising. We carried mosquito nets for use at night, but except to keep out the moisture, with which the air of the forest is loaded, they were of little service, as the mosquitoes were not at all troublesome. The insect most dreaded in the forest is the alligator ant. Men accustomed to the woods will never put their hands on a tree or branch without looking out for this fellow. He is ever ready to bite, and will continue to bite until shaken off. It is said that a single bite on the finger will cause the arm to swell to the shoulder, besides producing temporary partial paralysis of the limb; but happily none

of our party was able to verify this statement by experience.

Leaving lizards and frogs out of account, we saw very few reptiles. Of frogs, which were plentiful, two small specimens deserve mention. One of these, with a bright red body and blue legs, hops about as if he had no enemies, and though quite harmless is unmolested by nearly all birds. The other, with bright green body and irregular black stripes, has a very harlequin-like appearance. Snakes are said to be abundant, though we saw very few. The larger species, as the python and the boa, are not found in Nicaragua. Three venomous varieties exist, however, and are greatly dreaded by the natives. These are the toboba, tomaga and coral snake. The bite of the two first named is reputed to be inevitably fatal, and I was told by Dr. Stubbert, the chief surgeon of the Canal Company, that the popular belief seems to be well founded. A negro laborer in the employ of the company, who was bitten by a toboba, died within three days, in spite of everything that could be done for him. The proximity of the toboba is said to be indicated

by a peculiar vanilla-like odor. On the second day of the march one of the party, while climbing up the rocky side of a steep hill, killed a small one, which he came very near stepping upon. It was of a light chocolate brown color with paler angular stripes, somewhat like those on the rattlesnake. In fact, though it had no rattles, it looked as if it belonged to the same family.

The distance from the end of the railroad to Camp Menocal, our first resting place, was said to be only eight miles, but it seemed to us at least twice as far. The party was, of course, speedily broken up into groups, which in the end became widely separated. The leaders reached the camp about 11:30, but the rear guard, including Senator Miller, did not come in until one o'clock. Mr. Miller came up coatless, hatless, and perspiring, yet looking far from exhausted. He remarked that he had learned something about tramping in the Adirondacks. Major Dutton, of the United States Army, who, next to the senator, was the heaviest man in the party, arrived somewhat earlier, showing much more evident signs of distress.

Still all arrived blown, dripping with perspiration, thirsty, and desperately hungry. It is the custom of the country to rise between five and seven, take a cup of strong coffee and a cracker, and eat a substantial breakfast at noon. Having already conformed to the custom, we had left America after coffee, with the promise of breakfast at Camp Menocal. We were ready for it when we reached there. Provisions and cooks had been sent ahead, and the breakfast was also ready for us. It was a right good breakfast, too.

The provisions, like our bedding and changes of clothing, done up in rubber blankets, were borne in packs by native carriers. These men, nearly all of small stature, are of mixed Indian and Spanish descent, the Indian predominating in them. They are generally young, and the most patient and enduring beasts of burden, by all odds, I have ever seen. Each carries a machete to cut his way through the forest, and when his day's journey is ended, it becomes the ax for procuring firewood and building temporary shelter. It is also a terrible weapon, but the carriers are said to be remarkably

UNLOADING BALLAST ON RAILROAD

pacific. Unless made desperate, they strike with the flat side of the blade, thus inflicting a stinging but harmless blow. I have elsewhere referred to their reputation for honesty. They are certainly very polite and obliging, and will work cheerfully for very small compensation, about ninety cents per day.

Camp Menocal is situated upon the crest of a high hill in a clearing on the east bank of the Deseado. The clearing was made by the Canal Company, about two years before our visit, for a banana plantation, and it was covered by well-grown banana trees, which were, however, badly choked up by grasses and weeds. The camp, built after the manner of the native forest houses, is a collection of sheds or shacks, consisting of an open framework with hipped roof thatched with palm leaves. The floor, raised about two feet from the ground, is made of small logs split in half, the rounded side turned up. Rude cots, made in the same manner as the floor, and raised about two feet above it, are ranged on either side of the hut for sleeping accommodations. The cots are made tolerable by a covering of palm leaves. The

cots, as well as the floor, are raised as a protection against insects and reptiles.

In the clearing at Camp Menocal several very tall trees had been left standing. These stood apart from each other, had smooth bark, were unincumbered by vines, and from their lofty branches were suspended numerous bottle-like nests of a species of oriole. These birds choose high, isolated, smooth-barked trees for their nests, so that monkeys cannot descend on them from the tops of neighboring trees, and any predatory animal attempting to ascend the trunk will be exposed to their combined attack. Armed with strong sharp-pointed beaks, they are able to secure comparative immunity from disturbance. Late in the evening and early in the morning the forest resounds with chirp and song, but on the march we did not see a great many birds. The chief reason is the density of the foliage, in which the more timid and defenseless members of the feathery family find secure hiding place at the first unusual sound. Again, the plumage of many birds, as the smaller parrots and parroquets, is so nearly like the foliage of the trees they frequent that it is extremely

difficult to distinguish them. But there are some birds that disdain concealment. At the head of these stands the macaw, which by its harsh and repeated cries, is perpetually inviting attention to itself, while its gorgeous coloring of red, blue, green and yellow, quickly catches the eye. But "its formidable beak protects it from every danger, for no hawk or predatory mammal dares attack a bird so strongly armed." The larger parrots are also noisy and conspicuous, but they go in flocks, while the macaws go in pairs.

Another bird that attracts attention by its cries and coloring, is the toucan, or banana bird, which at first sight seems to be all bill. The bill is about six inches long, very stout at the base, and usually a brilliant red or yellow. One of the largest species (*Rhamphastus tocard*) is twenty-three inches long, the bill and tail constituting, each, one-fourth of the whole. The plumage is generally black, except the breast, which is clear lemon yellow bordered with red, tail-coverts white, and a band of red under the tail-coverts. Two or three different kinds of woodpeckers, among them the red-

crested, and several varieties of fly-catchers, some of them very beautiful, were the only other birds we frequently saw. However, trogons, tanagers, creepers, humming-birds, and other species are abundant. Mr. Belt noticed thirteen different kinds of humming-birds in the vicinity of Santo Domingo, in Chontales, and though they are seldom seen, he came to the conclusion, after learning their voices, that they equaled, if they did not exceed, in number all the other birds put together. One evening, about sunset, while descending the San Francisco in a canoe, I heard in the thickets on the banks the whistle of the "toledo" (*Chirosciphia lineata*), "so-called because its note resembles those syllables, clearly and slowly whistled, with the emphasis on the last two." It "is about the size of a linnet, of a general velvety black color. The crown of the head is covered with a flat scarlet crest, and the back with what looks like a shawl of sky blue. From the tail spring two long ribbon-like feathers." Another beautiful bird of which there are several species, is the trogon. The largest (*Trogon massena*), "is one foot in length, dark bronze

green above, with the smaller wing feathers speckled white and black, and the belly of a beautiful carmine." To this family belongs the "quesal" or royal bird of the Aztecs (*Trogon resplendens*), which, it is said, is sometimes still found in the forests of Segovia.

Without waiting at Camp Menocal for a siesta, which is an indispensable daily incident of the Spanish-American's life, we pushed on to Camp Miller, five miles further, where we had supper and remained for the night. Before supper, however, we had a refreshing dip in the cool water of the Deseado, and exchanged our wet for dry clothing. The forest air became damp and cool after nightfall, and we found our blankets a very essential part of the outfit. The log cots I have spoken of did not prove the most comfortable of beds, and some of the party complained next morning, in consequence, of feeling stiff and sore. But, otherwise, nobody was the worse for the tramp, and an early morning dip in the stream braced even the aching ones. Soon after daylight a member of the engineering corps went off with several natives, and returned in about an hour with

a great quantity of fine fish, captured by exploding a small charge of dynamite in one of the deep holes of the Deseado. One species, the juapoti (pronounced wah-po-ti), averaging about three pounds, is, as we discovered at breakfast, particularly savory. We did not leave camp before nine o'clock, and we had a hearty breakfast before starting, because we were to climb the divide, and there was to be no stopping place short of Camp Alice, fifteen miles distant, where we were to spend the second night. As we were leaving Camp Miller, we made our first acquaintance with the saw-grass, which grew in great luxuriance for some distance along the trail. It is a most atrocious plant. The serrated edges of its long, slender, leaves cut deep into the flesh at every touch. After an excessively tedious tramp, in which we climbed a succession of steep hills, one a precipitous cliff over three hundred feet high, the main body of the party reached Camp Alice about three o'clock in the afternoon. We missed the Deseado sadly, for here there was only a little brook, which furnished very poor facilities for bathing.

We had heard of the "milk" tree, and here we found several standing close at hand. They were thirty to forty feet high, with leathery, dark-green leaves and trunks a foot in diameter at the base, covered with a whitish, slightly rough bark. The milk, which flows very freely from an incision of the bark, is pure white, and has a rich, creamy, and altogether pleasant taste. It is not drunk, however, as it is said to produce obstinate constipation. It is apparently a species of fig, and closely allied to that from which the rubber of Nicaragua is procured. The last day's tramp took us over a succession of hills, toilsome enough, if not so high and steep as those crossed the preceding day, and along the crest of a steep ridge between the valleys of the Limpio and Chanchos, where the trees had been cleared away for the telegraph line, and where, besides being exposed to the full force of the sun, we did not find a drop of water for fully six miles. Consequently we suffered greatly from thirst. If we had been better acquainted with the forest, however, we would not have suffered at all. Three of us with parched mouths and well-

nigh exhausted, sat down to rest about a mile from Camp Salinas, the end of the tramp. A group of the big black congo monkeys (*Mycetes palliatus*), which was hiding in a great tree close by, scampered off as soon as we came to a stand. They were the first we had seen, and their wonderful agility in leaping from tree to tree made us forget our thirst for a moment. This species of monkey is not molested by the natives, except that they are sometimes shot for the purpose of taking the young, but the brown fruit-eating spider monkey (*Ateles*), plentiful in the interior, is much esteemed as an article of food. The congo monkey roars like a lion and makes night hideous in the forest.

After we had been resting some time, a member of the engineering corps, armed with a machete, overtook us, and, on learning our plight, gave us speedy relief by cutting a water vine that stood not thirty feet away. This is one of the most useful plants found in the forest, for, as was aptly illustrated to us, it often grows where no water can be found. It is one of the largest of the lianas. To secure the water, it must be cut first as high up as you can

reach and afterward close to the ground, for if it be severed first near the root, the sap will ascend so rapidly that scarcely any will be procured. A section about seven feet long will yield a pint of sweet, cool water. I certainly never relished a drink of water more than the one I had from this vine. While we were drinking several other members of the party came up equally anxious for a drink, and with heads throw back and hands raised in support of long sections of vine balanced vertically over our mouths, we formed an odd-looking group. We had taken only a cup of coffee and a cracker before leaving Camp Alice, as we expected to breakfast at Camp Carmen, about halfway to Camp Salinas. But Camp Carmen was on a by-trail, and the provision bearers, who set out in advance of the party, missed it and kept straight on to Camp Salinas, and those of us who were in the van followed the provisions. The remainder of the party went to Camp Carmen, but finding it tenantless, were forced to resume the tramp, hungry and disappointed. A fifteen-mile tramp over hills, under the burning sun of the tropics, without any-

thing more substantial than a cup of coffee and a cracker, is an experience that one does not care to repeat.

Camp Salinas is on the Chanchos, a considerable stream that empties a few miles below into the San Francisco, an important tributary of the San Juan. Chanchos is one of the names of the wild hog, or wari, of Nicaragua, an object of keen pursuit by sportsmen. Several of our party, who carried rifles or shotguns, were constantly on the lookout for it, but although we saw plenty of signs, and once heard some of them striking their teeth together, we did not get a glimpse of the animal. In another chapter I will speak at length of the game of Nicaragua, but I may mention here that we did not see any on the tramp. Undoubtedly our party was so large that the noise of its approach gave the game ample warning to seek cover.

At Camp Salinas we were to meet canoes to convey us down the Chanchos and San Francisco rivers to the steamer Irma, which was to await our arrival at the mouth of the latter. We were, however, ahead of the canoes, which did not come up until four o'clock, fully an hour

after the last of the party had reached camp. These canoes are of steel, built for the Canal Company after the Indian model, and their strength and carrying capacity are wonderful. The San Francisco, where we traveled it, is a deep stream about a hundred feet wide, but both it and the Chanchos are badly obstructed by logs. With thirteen men and a cartload of baggage in each canoe we made our way down these streams, which did not seem navigable for an empty skiff. The canoes were handled by natives, who used only the paddle. Wherever there was clear water sufficient, by vigorous plying of the paddles, they would give the canoe a spurt and send it, loaded as it was, over logs within six inches of the water's surface. In some places, however, the logs were several inches out of water, and there after the passengers had debarked upon the log, the natives lifted the canoe deftly over it. The sun was setting when we reached the San Francisco, and through rifts in the forest, flooded with rosy light in places the dense mass of bright green foliage on the banks. Between these glowing spots heavy shadows lay. Kingfishers darted

from perch to perch over the darkening water; unseen birds twittered and chirped among the overhanging vines; and the clear, sweet whistle of the toledo resounded through the silence of the forest.

We reached the mouth of the San Francisco about eight o'clock, and found the Irma tied up to the bank waiting for us. Waiting for us also was an excellent supper, which, after the fatigue of the day, it is needless to say we enjoyed. An adjunct not less enjoyed was ice, which is the luxury of luxuries in the tropics. The Irma, like all the other steamers on the San Juan, is a flat-bottom stern-wheeler, built after the pattern of the boats on our Western rivers. These steamers are owned and run by the canal company.

The Irma lay at the bank until after daylight next morning. In fact, on our journey to the lake we traveled only by day, so that we saw the whole river. The San Juan is a noble stream, generally speaking, about 300 yards broad, except at the rapids, deep, and with a swift current. Along the greater part of its course the banks are low and level and covered

with the characteristic vegetation of the forest. In a few places, however, it is overlooked by steep hills, and just above the mouth of the San Carlos it flows between mountains of considerable height. There are only three settlements and a few banana plantations between the ocean and the lake.

At one of these plantations, on the southern bank about two miles above the mouth of the San Francisco, we made a brief stop for a beef, which was killed and butchered on board. Some of the party went ashore and picked ripe bananas from the trees. They also got a few ripe watermelons and muskmelons. The place was owned by an enterprising Portuguese, who furnished wood for the steamers at a landing some miles further up. Late in the afternoon we came to the mouth of the San Carlos, but just before reaching it we had a startling incident.

On the southern side of the river there is a cluster of huts occupied by negroes and half-breeds, and from that, at our approach, a canoe, containing three men put off. One of the men in the canoe was a river pilot and as it neared

the steamer the engines were stopped. The vessel, however, retained considerable headway, and the canoe instead of coming alongside of a lighter moored beside her, attempted to cross its bow, was struck and overturned. Two of the men were seized by deck hands and pulled on board, but the third man went with the canoe under the lighter. He, however, reappeared upon the surface some distance astern and began to swim bravely for the shore. But the swift current carried him rapidly downstream, and it soon became evident that his strength was failing fast. Some men on shore were making frantic but ineffectual efforts to launch a canoe, so it was plain the man would drown if it rested with them to save him. Happily other means of rescue were at hand. One of the steel canoes before mentioned suddenly shot out from the side of the steamer to which our backs were turned, and glided rapidly down the river. Even then the man's fate hung in doubt, for he was fully half a mile away and it seemed as if he must go down before the canoe could reach him. But he was saved. Strong arms grabbed him just as he was

about to sink. His rescue was due to Mr. Chable, a young gentleman from Texas, who represented the canal company in Costa Rica. Hurrying from the saloon deck after the accident he made boatmen launch and man the canoe.

Immediately above the San Carlos, the San Juan is divided by a large island, and just beyond that the river seems to flow out of a cavern at the base of a mountain fully 2,000 feet high. However, the river only makes a sharp bend and washes the foot of the mountain. A few white cranes and a beautiful species of snipe, called the "spur-wing," which has a most graceful way of holding its wings spread a second after lighting, were almost the only birds we saw along the river. Upon the sand bars along the margin, however, were millions of yellow butterflies. They covered the bars completely, and in the distance seemed like great patches of cloth of gold. I could not make out what they were doing there unless they were drinking water.

Early on Sunday morning we arrived at the Machuca Rapids, so called from Captain Diego

Machuca, who about 1539 built a vessel near Granada, explored the lake, discovered the San Juan, and followed it to the Atlantic Ocean. The rapids are impassable for steamers, so we left the Irma at the foot of them. They are between two and three miles long, and along the northern bank of the river is a road, which in the days of the transit company, was cut for transferring passengers and fast freight. Some of our party walked up by this road, but the majority went up in lighters pulled by natives.

Above the rapids we took a smaller steamer, the Adele, which carried us to Castillo early the same afternoon. Here again high hills with declivitous sides overtop the banks of the river. Here also the river makes a sharp descent, more like a fall than a rapid. Upon the crown of a lofty hill on the southern bank stands the old Spanish fort San Juan, built in the latter part of the seventeenth century. Subsequent generations called it Castillo Viejo, "old castle," but now it is contracted to Castillo and gives its name to the little village beneath it. It is an angular structure of stone, of considerable dimensions, and surmounted at one of the

angles by a beehive-like tower of observation. At the time of Squier's visit, in 1849, both the hill and fort were overgrown with trees, but now the walls are whitewashed and the sides of the hill are covered with sward. The opposite hills are also cleared of timber, and appear to be used for pasture. A small garrison is maintained in the fort, which is also a place of confinement for political prisoners and criminals. A salute was fired from the fort at our approach. The English, under the great Nelson, captured this fort, after a stubborn resistance, in 1780. He reduced it by taking possession of a commanding hill in the rear.

The village is built upon a narrow shelf between the foot of the hill and the river. It is a collection of wretched wooden shanties, the only decent buildings being the storehouses and offices of the steamboat company. There is only one street, running through which is a tramway, used for transferring freight above the rapids. The custom house of Nicaragua for the San Juan River is located here, and the officials showed a very evident disposition to collect duty on our supplies, but by an exces-

sive expenditure of Spanish were persuaded to desist. At the upper end of the village we found a little steamer, the Norma, to take us up the Toro Rapids, which are about fifteen miles long. It was so small that it could not carry more than half of the party, so some of us had to remain over night at Castillo. We found very good accommodations, however, in the company's buildings.

At Castillo the village priest, a fat, unctuous, and, as we soon discovered, exceedingly greedy mulatto, made himself, uninvited, a member of our party. The village fop attempted to do likewise, but was prevented by the officer in charge of the steamer, whereat he assumed the air of an injured grandee. The Toro Rapids extend from Castillo to the mouth of the Savallo River, about fifteen miles. The channel is very tortuous and the current in places so strong that the little Norma could scarcely make way against it. In these rapids we saw thousands of tarpon, the *savalo-real* of the natives. This fish has a way of rising to the surface and showing its dorsal fin after the manner of the porpoise. They are so abundant

that they frequently jump into the Norma, and a short time before our visit five were thus captured on one trip. They were all between five and six feet in length. Here also we saw an immense alligator, whose head alone was more than five feet long. When first noticed he had his head in a shallow place between two rocks, and his upper jaw raised at right angles to the lower jaw, so that it looked like a gnarled snag. The river men said that was his manner of fishing. Alligators are said to be very abundant in the river, but that was the first and only large one we saw. The snout is more pointed and otherwise differently shaped from that of the alligator found in the southern part of the United States.

The Savallo is a small river whose sources are in the Chontales Mountains, at a considerable distance from the San Juan. A short distance above its mouth there is a hot spring, the water of which is believed to possess excellent medicinal properties. About the sources of this river, which are difficult of access, gold in considerable quantities was said to have been discovered a short time before our arrival. The

largest of the river steamers, the Managua, plies between the Savallo and San Carlos on the lake at the head of the San Juan, and makes the trip in less than six hours. The distance is about thirty miles. Above the Savallo the San Juan is broad and deep and its current comparatively slow. The banks are low and frequently broken by lagoons. A palm, with great coarse leaves twenty feet in length, abundant in the delta, makes its reappearance here.

We reached San Carlos about six o'clock in the evening, in time to see the sun set on the lake, but of that hereafter. The village, named from the old Spanish fort that looks down on it, is on the north bank of the river, upon rolling ground, which terminates at the angle between the river and the lake in a high hill, upon whose crest stands the old fort. There is another high hill behind the town, so that altogether the situation is a striking one. The village is a heterogeneous collection of adobe structures, wooden buildings, lop-sided shanties and thatched huts. It contains several hundred inhabitants, and numerous goats. Half of the population was assembled about the

wharf-house to witness our arrival, which had been heralded by a salute of several guns from the fort. General Gutierres, the commandant of the post, came down to meet us, and invite us to inspect the fort. We accepted the invitation in a body, and he put his little garrison of twenty men through a dress parade for our benefit. Afterward he gave us some very good brandy. A fort which stood upon this site was captured by the English in 1665, and subsequently retaken by the Spaniards. Whether it was the existing fort, which undoubtedly is very old, is uncertain.

CHAPTER V.

THE GREAT LAKE.

From the ramparts of the old fort we saw the sun set on the great lake. In the glowing light of the evening it seemed like a sea of gold, studded with emerald isles. To the southwest, the forest-covered shore line receded to a mere thread. that vanished under the cloud-capped mountains of Costa Rica. Beneath the setting sun, with the golden water beyond as well as in front of them, were the verdant archipelagoes of Chichicaste and Solentiname. The twin mountains of the lake—the lofty, conical Ometepec and his shorter, dome-shaped brother, Medeira, in the northwest, alone interrupted the endless expanse of water, while the rugged, undulating eastern shore, its densely wooded headlands and hollows abounding in contrasts of light and shade, was lost in the distance below a range of peaks just showing

above the northern horizon. It has been well said: "The lake is too large to be called beautiful, and its vast extent and the mere glimpses of its limits and cloud-capped peaks appeal to the imagination rather than to the eye." Had we not known better, we might easily have believed that we were gazing on the Pacific Ocean.

The most prominent landmarks in sight were the twin peaks in the northwest and three more distant but equally lofty peaks in the southwest. These last are the volcanoes Miravaya, Rincon de la Vieja, and Orosi, in Costa Rica. The clouds, which bridge-like spanned their summits as well as those of Ometepec and Medeira, all purple and gold, became somber and black as the light went out of them. The natives, who are full of poetic fancies, call these clouds "the night cap." The clouds are still there in the morning, but all fleecy, and may then be called the white cap. Orosi, which is the northernmost of the Costa Rican peaks, was in active eruption in 1844, when it gave rise to earthquake shocks, felt with considerable force as far north as Rivas; but it is quiet now. Ometepec and Medeira stand in the lake about

twenty miles from its western shore. "Ometepec," says Mr. Belt, "is almost pure Aztec for two peaks, but the island itself only contains one, and the name was probably given by an invader who saw the two peaks of Ometepec and Medeira from the shore of the lake, and thought they belonged to one island." Mr. Belt, however, was wrong and the invader right, for the peaks really occupy one island. Although there is a strip of low land between them, it is seldom, if ever, covered by water. The island is about eighteen miles long by six wide, and is rather densely peopled, containing from 8,000 to 10,000 inhabitants. Medeira is wooded to its summit and Ometepec nearly so. On their slopes are numerous villages and coffee and cocoa plantations. Ometepec, the more northern of the two peaks, is 5,320 feet, or a little more than one mile high. Medeira is about a thousand feet shorter. Ometepec alone has been active in historic times. Until 1885 it was supposed to be a dead volcano. Then it woke from its rest of ages, and also roused the people of the surrounding country, especially the inhabitants of the island and those of Rivas,

CAMP PEREZ, ENGINEERS' SHACKS

CASTILLO, LOOKING UP THE RIVER SAN JUAN

which stands near the western shore of the lake a little to the southward of the volcano. A considerable stream of lava flowed down the western side of the mountain, and destroyed many plantations and houses; but no lives were lost, as the people had time to flee from their homes. Earthquake shocks of considerable violence and several weeks' duration alarmed the people of Granada and Rivas, and there was a great upheaval of ashes, which covered many plantations on the island that the lava did not reach, and carried by the prevailing wind over to the mainland, injured many others in the vicinity of Rivas. It is said, however, that the ultimate effect of the ash deposit on the mainland was to increase the fertility of the soil. After some months of activity Ometepec lapsed into rest again and remained quiet until a few days before our visit, when it began to rumble and smoke a second time. As we passed it on our way up the lake a few thin jets of white smoke rose lazily from the apex and formed tufts and wreaths above. There was, however, no serious disturbance or active eruption.

The regularity of the trade wind, which is at

its strongest in the afternoon, heaps the water of the lake up on the western shore, and causes a diurnal tide-like movement that was long mistaken for an actual tide. The same force also produces a heavy surf along the western shore, while on the eastern shore there is usually little more than a ground swell. The shores of the lake are characterized generally by hard, sandy beaches, overlooked by bluffs or rocky promontories. With the exception of San Carlos there are only a few hamlets on the eastern shore, the large towns being all on the west side. The chief of these are Granada, near the head, and Rivas and San Jorge, near the foot of the lake.

Navigation on the lake is rendered dangerous for small boats by the prevalence of violent thunder squalls during at least nine months of the year. For that reason, probably, only an occasional sail is to be seen upon the lake, except near the western shore, where numerous small craft ply. A few clumsy, schooner-rigged bungoes cross the lake. There is only one steamer on the lake, the Victoria, a stanch vessel of the seagoing type and about

300 tons, owned by the company which has the steamers on the river. This boat, built at Wilmington, Delaware, in 1882, was warped up the rapids of the San Juan during the high-water season. She is a twin-screw vessel and comparatively fast, as she makes the voyage between San Carlos and Granada, 110 miles, in a little less than eleven hours. She makes two or three trips a week between those points, and touches at San Jorge on the return to San Carlos. The Victoria is not by any means the first steamer to ply on the lake. The transit company, already referred to, had several steamers plying between San Carlos and La Virgen, on the opposite side of the lake, from 1850 to 1866. We saw the ribs of two of them projecting from the shallow water of the lake a short distance from the beach at San Carlos.

The Victoria met us at San Carlos and we spent the night on board.

At five o'clock next morning we started for Granada. The weather was bright, and we had an excellent view of the lake and its surroundings. By eleven o'clock we had Ometepec and Medeira abeam on the port hand. Ometepec is

an almost perfect cone, and probably is without an equal in symmetry among mountains the world over. We were not close enough to distinguish the minor features of the island, but it appeared to be densely wooded. In marked contrast, however, with the rich green of the landscapes we had hitherto seen, it looked sere and brown. We saw afterward that all vegetation on the west side of the lake was parched. The dry season, which was now drawing to its close, had been unusually dry. Not a drop of rain had fallen in six months and the fields and forests were literally burnt up. I have said elsewhere that from the middle of the lake its shores are invisible, and that the proximity of land is indicated only by the distant mountain tops. The blue peaks of Chontales, Matagalpa and Segovia were just discernible now in the east and northeast.

After passing Ometepec, two other landmarks came in sight. The more dominant was the double-headed volcano Mombacho, which overshadows the city of Granada. The other was the large volcanic island Zapatero, which lies about thirty miles northwest of Ometepec.

It is several miles in extent, but nowhere more than a hundred feet above the surface of the lake. Thickly wooded and supplied with abundant moisture by the surrounding water, it shone like a great flat emerald in the blazing afternoon sun. When we had put Zapatero behind us, another gem of the lake was revealed. It is called Los Corales, though there is nothing coral about it. At a distance it looks like a brilliant green cape jutting out into the lake from the foot of the somber Mombacho, but a closer inspection discovers that it is a collection of the most charming little islands the eye ever rested on. It is said that they exceed 600 in number. So compact is the group that the innumerable water-avenues are completely arched with verdure, intermixed with a profusion of flowers of various and brilliant hues. The vistas of these embowered waterways present a most cooling and delightful contrast to the glaring, burning atmosphere without.

Between these islands and the mainland is a spacious cove, which furnishes the harbor for Granada. A long pier, with a house at the shore end; a number of canoes and bungoes

anchored in the still water; a crowd of women and several ox carts in the shallow water near the beach, were the chief features of the scene opened to us as we rounded the point of the islands. The women, clad in a single chemise-like garment, the swarthy skin of their arms and shoulders exposed to the sun, were most of them up to the waist in water, washing clothes. The beach was white with clothes spread out to dry. The carts were down for water required in the town, and some of them were driven so far into the lake that only the heads of the oxen remained visible. A crowd of men, women and children was gathered on the pier, while about the building at the opposite end was a collection of vehicles, some of which looked as if they might have been in use at the time of the conquest. The pier is several hundred feet long, and built upon log pens anchored with rock. Pile driving is unknown on the lakes. Upon the pier is an iron tramway for the handling of freight. We had now also a near view of Mombacho. This mountain is not as high as Ometepec, nor is it remarkable for symmetry, but the peak is divided

by a curved depression into two heads. In the middle of the depression is what the people call the "Lost Lion of Granada." It is a formation resembling a huge lion in a crouching attitude. Although its bald, black, double-crested summit bears mute evidence of the fact, even tradition is silent in regard to Mombacho's activity.

Northwest of Lake Nicaragua, separated from it by a strip of land about sixteen miles wide at the narrowest part, lies Lake Managua. Although greatly inferior in size, it is nevertheless a considerable body of water. Its greatest length is about fifty, and its greatest width about thirty-five miles. The level of Lake Managua is about twenty-four feet above that of Nicaragua. Upon existing maps a connection between the two lakes is indicated by the Rio Tipitapa, but in this, as in many other instances in Central American geography, the word river is misleading. In seasons of excessive rainfall there is probably a considerable overflow from the upper to the lower lake, but ordinarily the channel of the Tipitapa proper is quite dry. And that it was so at the time of

the conquest appears from the testimony of the Spanish chronicles of that period. The so-called river is formed on the Nicaragua side by a river-like extension of the lake itself. This extension, called the Estero Panaloya, is twelve miles long, and at its head about 300 feet wide. The banks are low and densely wooded, and the depth of water at Pasquier, where the Tipitapa begins, is six feet. From Pasquier to Lake Managua, a distance of four miles or therabout, the Tipitapa is a broad ravine with a dry bed. About a mile below the lake, opposite the hamlet of Tipitapa, is the fall of the same name. It is an escarpment about fifteen feet high. Several hot springs occur in the valley, and at this place there is one the temperature of which is near the boiling point. It is noted among the natives for its medicinal properties.

By one of the provisions of its concession, the Maritime Canal Company of Nicaragua is required to cut a canal from Pasquier to Lake Managua, navigable for vessels of six feet draft. The material to be excavated is soft, volcanic rock in the bed of the Tipitapa, and mud, for a

short distance, in the estero and Lake Managua. Pasquier is a mere landing place at the head of the estero, from which bungoes carry woods and other products to Granada and elsewhere on Lake Nicaragua.

Lake Managua is a mountain amphitheater. On every side, except the southeast, it is hemmed in by towering peaks. The mountains of Matagalpa form a majestic wall in the east, and send off spurs along its northern shore into the department of Leon, while in the northwest the volcanic range El Mirabios, the Marvels, beginning with Momotombo and ending with Coseguina, stretches from the lake to the Gulf of Fonseca, and separates the plains of Leon and Conejo. A succession of peaks, less commanding but still of considerable elevation, belonging to the same chain, parallels the western shore. The volcano Masaya, about halfway between the lakes, and Mombacho, already described, are also parts of this system. Momotombo is the highest mountain in Nicaragua. Its summit is just 7,000 feet above the surrounding plain. It is cone shaped, but its symmetry is marred by a depression, appar-

ently a crater, on its western slope about two-thirds of the way up. Vegetation also stops about the same altitude on all sides. Bare patches of lava occur lower down, and on the southern side a great bald strip extends for one or two miles along the water's edge. From the apex several columns of steam rise to form a fleecy canopy.

Momotombo is indeed a perennial smoker. It was smoking at the time of the conquest and has been smoking ever since, but it has never been known to be in actual eruption. It is said by the natives that no one has succeeded in accomplishing the ascent of this mountain. Immediately after the conquest the Spanish priests, in an excess of religious zeal, essayed to plant the cross upon the summit of every mountain in the country, but the two friars who set out to Christianize Momotombo were not seen or heard of afterward. That circumstance seems to have cooled the ardor of the survivors, for no further efforts were made to convert the mountain. In the arid strip above spoken of are numerous hot springs, which send forth jets of steam and, in some instances, columns of

boiling water two feet high. Mr. Squier, who visited these springs in the summer of 1849, says that there was a sound below the surface of the earth as of water boiling violently in a cauldron, and one of the earliest Spanish chroniclers recorded that the Indians of a village near the foot of the mountain cooked their food in the water of one of these springs, which would boil an egg quicker than he could say an *ave.*

Standing in the lake about three miles southeast of Momotombo, is Momotombito, or little Momotombo, a beautiful dome-shaped peak, perhaps 3,000 feet high, wooded to the crest. It is about eight miles in circumference. Notwithstanding its delightful situation it is uninhabited now, but the Indians occupied it at the time of the conquest, and there are many stone monuments and other archæological remnants concealed beneath its tangled vegetation. One or two specimens secured by Squier from this island are now in the Smithsonian Institute at Washington. The volcanic mountains and islands in the lakes were favorite places with the Indians for rearing their temples and bury-

ing their dead. Probably the superstitious awe inspired by the mysterious and tremendous energies they manifested was the chief factor in determining their selection.

The Marvels, besides others less conspicuous, include nine principal peaks. These are, in the order of their position proceeding from the lake northward, Momotombo, Axusco (or Asosco), Las Pilas, Orota, San Jacinto, Telica, Santa Clara, Viejo, and Coseguina. Another, besides Momotombo, was smoking at the time of my visit to Leon, but as it was some distance away I could not ascertain its name. Second in point of height only to Momotombo is Viejo, 6,000 feet high. It is quiet now, but in the latter part of the seventeenth century it emitted smoke by day and "flames at night." Telica, which is the nearest to the city of Leon (about twenty miles), and two others, probably Santa Clara and Viejo, were described at the time of the conquest as emitting great volumes of smoke, which covered the country to the westward, and was hot enough to destroy the crops when atmospheric conditions drove it to the ground. In April, 1850, a volcanic eruption oc-

curred near the base of Las Pilas, which had been quiet for centuries. For two days loud rumbling noises had been heard, and repeated earthquake shocks felt at Leon, and on Sunday morning, April 13th, a vent was made in the plain. Smoke, flames, fragments of rock, and lava were ejected with a great roaring sound to the height of several hundred feet. The eruption was continuous for seven days, and then subsided into occasional outbreaks. The earthquake shocks were not severe enough to do any damage in Leon, nor was there any elevation of the earth surrounding the vent, but the discharge of fragmentary rock and stones was sufficient to form around it a cone about 200 feet high and 600 yards in circumference, at the base. In two weeks to the day the eruptions ceased altogether. Squier, who visited it when its activity was subsiding, says the cone was covered with yellow patches, caused by crystallized sulphur deposited by the hot vapors escaping through the loose stones.

The bases of the mountains in this part of the range are surrounded by the *malpais*, or bad lands, referred to in the opening chapter.

These extend in some places "for leagues in every direction. The lava current in places seems to have spread out in sheets, flowing elsewhere, however, in high and serpentine ridges, resembling cyclopean walls, often capriciously inclosing spaces of arable ground, in which vegetation is luxuriant: these are called by the natives *corrales*, yards. Hot springs, and openings in the ground emitting hot air, smoke and steam, called *infernillos*, are common around the bases of these volcanoes. For large spaces the whole ground seems resting upon a boiling cauldron, and is encrusted with mineral deposits. There are also many places where the ground is depressed and bare, resembling a honeycombed, ferruginous clay pit, from which sulphurous vapors are constantly rising, destroying vegetation in the vicinity, but especially to the leeward, where they are carried by the wind. By daylight nothing is to be seen at these places, except a kind of tremulous motion of the heated atmosphere near the surface of the ground. But at night the whole is lighted by a flickering, bluish and ethereal flame, like that of burning spirits,

which spreads at one moment over the whole surface, at the next shoots up into high spires, and then diffuses itself again in a strange, unearthly manner. This is called by the "*gente del campo*," the people of the fields, "*la bailede los Demonios*,' the dance of the devils."*

One of the most remarkable centers of volcanic energy on the face of the earth is the now inactive crater of Masaya. At the time of the conquest it was filled with a mass of molten matter, the reflection from which illuminated the surrounding country at night for leagues. It so greatly impressed the superstitious Spaniards that they called it *El Inferno de Masaya*, the Hell of Masaya, while its Aztec name, *Popogatepec*, smoking mountain, bears witness to its activity for ages. The cupidity of the Spaniards led them to believe that the glittering mass at the bottom of the crater was molten gold, and one, Fray Blas de Castillo, at the imminent risk of being roasted alive or suffocated by the sulphurous fumes, caused himself to be lowered into the crater so that he could reach the shining matter with an iron

*Squier's "Nicaragua."

bucket attached to a long chain. One account has it that his foolhardiness was rewarded with only a bucketful of pumice, while according to another, which seems the more credible, as soon as the bucket touched the fiery surface it was melted off. The crater is described as about 800 feet deep and the matter at the bottom, says the chronicler, "resembles a red sea, and its commotions make as much noise as do the waves of the ocean when they dash against the rocks. This sea looks like the metal of which bells are made, or sulphur or gold in a state of fusion, except that it is covered with a black scum, two or three fathoms thick. Were it not for this mass of scum, or scoriæ, the fire would throw out such an ardor and luster that it would be impossible to remain near it, or look upon it. Sometimes it breaks apart in certain places, and then one can perceive the matter, red and brilliant as the light of heaven. In the midst constantly rise two large masses of melted metal, four or five fathoms across, which are constantly free from scum, and from which the liquid metal leaps forth on every side. The sound of these melted streams,

dashing against the rocks, is like that of artillery battering the walls of a city. The rocks around this sea of metal are black to the height of seven or eight fathoms, which proves that the liquid matter sometimes rises to that distance. Upon the northeastern side of the crater is the opening of a cavern, very deep, and as wide as the range of an arquebuse. A stream of burning liquid flows into this cavern, which seems to be the outlet of the crater. It runs for a few moments, stops, then commences again, and so on constantly. There comes from this cavern a thick smoke, greater than rises from the whole lake, which diffuses on all sides a very strong odor. There comes forth also a heat and brilliancy which cannot be described.

"During the night the summit of the mountain is perfectly illuminated, as are also the clouds, which seem to form a kind of tiara above it, which may be seen eighteen or twenty leagues on the land, and upward of thirty at sea. The darker the night the more brilliant the volcano. It is worthy of remark, that neither above nor below can the least flame be seen, except when a

stone or arrow is thrown into the crater, which burns like a candle."* The final eruption, the last expiring effort, of this volcano occurred in 1670, when it threw forth great quantities of lava, that covered leagues of the plain intervening between the mountain and the lakes, and to-day resembles a vast field of cast iron. With that effort the fires of the volcano were extinguished, though it did emit some smoke and ashes in 1857.

The volcano, however, is not more remarkable than the lake, of the same name, which reposes at its feet. This lake is about three miles in diameter. The surface of the water is about 200 feet below that of Lake Managua, and it is surrounded, except on the side of the mountain, where the overflow of lava has formed a rough slope, by precipitous cliffs measuring 348 feet above the water level. The old chroniclers said that these cliffs were a thousand fathoms high, and Squier estimated them at about 1,000 feet, but their actual height determined by measurements is as given above. Although the lake has no outlet the

*Ovideo, quoted by Squier.

water is fresh and wholesome, and the chief source of supply for the large town of Masaya, close at hand. The water is certainly very deep and the Indians say the lake is bottomless. There seems little reason to doubt that the basin of this lake was hollowed out by a stupendous volcanic explosion. Mr. Belt, who made a careful examination of the surrounding cliffs, found that they are composed of six different strata, which he describes as follows: "At the bottom are seen great cliffs of massive trachyte. Above this is an ash bed, then a bed of breccia, containing fragments of trachyte, then another bed of cinders, which looks like a rough sandstone, but is pisolitic, and contains pebbles of the size of a bean. This bed is surmounted by a bed of great interest. It is composed of fine tufa, in which is imbedded a great number of large angular fragments of trachyte, some of which are more than three feet in diameter. It is the last bed but one, the surface being composed of lightly coherent strata of tufaceous ash, worn into an undulating surface by the action of the elements. I believe there is but one explanation possible

of the origin of these strata, namely, that the great bed of trachyte at the base is an ancient lava bed; that this, perhaps long after it was consolidated, was covered by beds of ashes and scoriæ thrown out by a not far distant volcano, and that at last a great convulsion broke through the trachyte bed and hurled the fragments over the country along with dense volumes of dust and ashes. The angular blocks of trachyte imbedded in stratum No. 5, are exactly the same in composition as the great bed below, and in them I think we see the fragments of the rocks that once filled the perpendicular-sided hollow now occupied by the lake. Looking at the vast force required to hollow out the basin of the lake, by blasting out the whole contents into the air—distributing them over the country so that they have not been piled up in a volcanic cone round the vent, but lie in comparatively level beds—I cannot expect that this explanation will be readily received, nor should I myself have advanced it if I could in any other way account for the phenomena.

"Still, within historical times, there have

been volcanic outbursts, not of such magnitude, certainly, as was required to excavate the basin of the lake of Masaya, but still of sufficient extent to show that such an origin is not beyond the limits of possibility. Thus in the same line of volcanic energy, there was an eruption of the volcano of Coseguina, on the 20th of January, 1835, when dense volumes of dust and ashes and fragments of rocks, were hurled up in the air and deposited over the country around. The vast quantity of material thrown out by this explosion may be gathered from the fact that, 120 miles away, near the volcano of San Miguel, the dust was so thick that it was quite dark from four o'clock in the evening until nearly noon the next day; and even at that distance there was deposited a layer of fine ashes four inches deep. The noise of the explosion was heard at the city of Guatemala, 400 miles to the westward, and at Jamaica, 800 miles to the northeast."

A strong confirmation of the theory so modestly put forth by Mr. Belt, but apparently overlooked by him, is the statement of Squier, that the crater formed by the explosion of Cose-

guina is several miles in circumference, and therefore not very much smaller than that of Masaya. He adds: "The quantity of matter ejected was incredible in amount. I am informed by the captain of a vessel which passed along the coast a few days thereafter, that the sea for fifty leagues was covered with floating masses of pumice, and that he sailed for a whole day through it without being able to distinguish but here and there an open space of water." A further confirmation is found in the fact that there are many other basins of the same character, though much smaller, within a radius of twenty miles of Masaya and some others in different parts of the Mirabios. There is one close to the city of Managua, which also contains fresh water, but in some of these basins the water is salt.

CHAPTER VI.

THE PACIFIC SLOPE.

THE Pacific slope is at once the grain-field and the garden of Nicaragua. It was densely populated, and in a high state of cultivation at the advent of the Spaniards. The old chroniclers were amazed at the fertility of the soil, and called it "a land of abundance, of good fruits and of honey and wax." Concerning the inhabitants it was said: "They had a great quantity of cotton cloths, and they held their markets in the open squares, where they traded. They had a manufactory where they made cordage of a sort of *nequin*, which is like carded flax; the cord was beautiful and stronger than that of Spain, and their cotton canvas was excellent. The Indians were very civilized in their way of life, like those of Mexico, for they were a people who had come from that country, and they had nearly the same language. They

had many beautiful women. The husbands were so much under subjection that if they made their wives angry they were turned out of doors, and the wives even raised their hands against them."

The difference in climate and vegetation between the two coasts was referred to in the opening chapter. The average temperature, the year round, at America on the Atlantic coast, is only 77 1-6°, while during our stay on the Pacific coast, in the month of April, the thermometer every where ranged from 95° to 98° F. between 11 A.M. and 5 P.M. The Atlantic coast is perennially clothed in green, while the Pacific coast, on account of its long dry season, is parched and dead in March and April. When we arrived there the prevailing color of the landscape was a brownish yellow, from the dust which had settled upon everything above the surface of the earth. Not a drop of rain had fallen in six months. The fields were as bare as they are in the southern part of the United States during midwinter, while the forests seemed as if they had never grown underbrush. Even the smaller trees were leafless on

their lower branches, though many of them had sickly tufts of green on their tops. Only the lofty trees, whose taproots found moisture far below the surface, wore verdant or flowery crowns, as if indifferent to the withering drought about them. All of the streams were dried up, but there was a little moisture left in the deep ravines which formed their beds, so here and there a ribbon of living green formed a pleasing contrast to the dead landscape everywhere else. Numerous fires had been set to burn the stubble from the fields and the dead brush from the forests, so that the atmosphere was hazy with smoke. After the rainy season sets in, however, a wonderful transformation comes over the face of the country. The fields are covered with verdure, the trees put forth blossoms and new leaves, and the earth smiles as if still in the first blush of youth.

There is a difference in kind, as well as in season, between the vegetation of the Atlantic and Pacific coasts. Generally speaking, the underbrush is neither so varied nor so luxuriant on the latter as on the former. The various palms and foliaceous tree ferns, which form so

conspicuous a feature of the forest between Greytown and the lakes, disappear on the Pacific slope, and almost the only species of palm to be seen are the cocoanut and the coyol or wine-palm (*Cocos Butyracea*). This last tree, besides producing in great clusters a nut like a diminutive cocoanut, which renders a very fine oil, yields a palatable drink, that was one of the few intoxicants known to the Indians before the advent of the Spaniards. The wine is secured by felling the tree and making a large oblong opening in the trunk just below the leafy crown. In a day or two the opening will be filled with the sap of the tree, a clear yellowish liquid, which ferments as it collects.

The wine will continue to run for about twenty days, so that each tree yields several gallons. Mr. Belt was told that a very large grove of these trees near Granada was cut down by the government, because the Indians used to assemble there and get drunk during their festivals.

The Indians may be given to getting drunk on festal occasions, but so far as I was able to observe, their everyday life seemed to be char-

acterized by remarkable sobriety. Some of the larger trees are common to both coasts, while others are peculiar to the Pacific coast. A tree which attains great size here and is also very common is the cebia, or cottonwood. It is used almost entirely by the Indians for making their bungoes or larger boats, which are simply shaped from the trunk and then hollowed out. The fustic, a valuable dyewood, is found in great abundance in the forests of the Pacific coast and extensively exported. The mahogany is also abundant here. One of its chief uses is to furnish wheels for the *caretta* or ox-cart, which is one of the features of the country.

The chief cities of Nicaragua are situated on the Pacific slope. These are in the order of their importance as determined by population, Leon, Masaya, Granada, Chinandega, Managua, Rivas, Chichigalpa, El Viejo, San Jorge, Corinto, and San Juan del Sur. Corinto is the seaport of the department of Leon and Chinandega; San Juan del Sur, that of Rivas, and San Jorge is the port of Rivas on Lake Nicaragua. In the eastern departments are also many towns, but

few worthy of note. These last are Matagalpa, in the department of the same name; Ocotal, in Segovia; and Acoyapa, Libertad and Juigalpa, in Chontales.

Granada is in some respects the most notable city in Nicaragua. It was the earliest Spanish settlement in the country, though, as is true of nearly every one of the other cities, there was an Indian town upon the site before the coming of the invader. For more than two hundred years it was the commercial center of the province, and for the greater part of that time of all Central America. Consequently it was the seat of much wealth. In the sixteenth and seventeenth centuries a great fair was held there annually, at which the merchandize of Spain was exchanged for the products of the country, and the transactions, computed in the values of the present day, amounted to several millions of dollars. But it has known misfortune as well as prosperity. It was twice burned; first by the pirates of the South Sea, as the Pacific was then called in 1686, and again in 1855 by the equally lawless filibuster, Walker.

The Granada of to-day is substantially a re-

production of the city destroyed by Walker. It is situated between one and two miles from the lake, and on that side is built upon terraces. The streets ascend from one terrace to another by steep, paved declivities. The city is well laid out with the streets at right angles. The buildings, with few exceptions, but one story in height, are constructed of adobe (sun-dried brick), or tufa, a soft, volcanic rock, which on exposure to the sun and air becomes very hard. The roofs are of tiles laid upon small bamboo poles with which the rafters are covered. The eaves project over the sidewalks, which are narrow, and thus afford protection to foot passengers from the sun and rain. Each dwelling has one large double door opening as a rule from the street into the reception room, or *sala*, which is also the family sitting room. In some instances there is a second door affording communication between the street and another apartment of the building, while in others the entrance is through a gate opening on a passageway leading to the courtyard. The windows are few and small. They are always without sashes or exterior shutters, but are

generally characterized by small semicircular balconies protected by iron bars or wicker-work. Every dwelling is built around a rectangular courtyard, which is encompassed by a veranda and planted with fruit and flowering trees. The family apartments, seldom more than six in number, are arranged on three sides of the courtyard, the kitchen, storeroom, bath, etc., being on the other side. Sometimes, however, there is a second courtyard on which are placed the servants' rooms and other accessory apartments. The main rooms are each connected with the adjoining and with the interior veranda by doors. Where, as is frequently the case, especially if the building fronts on a plaza, there is an exterior veranda, each of the adjoining rooms has a door opening on it. The floors are generally of large red tiles, but in some instances the parlor is floored with enameled or ornamented tiles. The houses stand flush against each other and being generally of the same style and material, have, in many places, the appearance of a single building covering the entire block.

The plaza is inclosed by a fence and laid out

with walks between which are planted ornamental and flowering trees and shrubs. The plaza is about the only place within the city proper where trees are to be seen, as there are few if any in the streets, and those in the courtyards are invisible from without. The streets in the center of the city are paved with flagstones on the sidewalks and cobblestones on the roadbeds. The latter are depressed in the middle for the purpose of drainage. The plaza is the business as well as the geometric center of the city. On the south side of it is the market place, surrounding it, and on the streets in its immediate neighborhood are situated the principal stores, warehouses, residences and public buildings. At the southeastern angle of the plaza stands the unfinished church of San Juan de Dios, which has been more than a century in building, yet at the time of my visit more resembled a ruin than an edifice in course of construction. Throughout Nicaragua religious zeal has found expression for centuries in the erection of vast temples, and this particular one was designed to be second in size only to the great cathedral of

Leon. However, no work has been done on it for years, and doubt may well be entertained, now, whether it will ever be finished. As the city has several imposing though not particularly ornate church edifices already, it may also be doubted whether this last is actually needed.

But the march of improvement, though arrested in church building, continues in other directions. Since the tap of the trowel has died upon the walls of San Juan de Dios, the screech of the locomotive has waked the echoes of the surrounding hills and startled the slumbering lion upon the lofty summit of Mombacho. Of that, however, more hereafter. Let us glance meanwhile at the new, commodious market place finished in 1891, where Indian and half-breed women complacently smoke *puros*, or long thin cigars, and exhibit the products and wares of the country. Here the fact which first and foremost claims your attention is the astonishing variety of fruits exposed for sale. Cacao beans by the bushel, melons, plantains, bananas, bread-fruit, oranges, lemons, limes, citron, cocoanuts, guavas, anonas or

CANAL CLEARING, LOOKING ACROSS LAGUNA BENARD

THE "VICTORIA" AT SAN JORGE WHARF, LAKE NICARAGUA

chirimoyas, white and yellow guayaquils, pineapples, mamays, mangos, plums, the avocado, or alligator pear, and others never seen or heard of in Northern markets. The display of vegetables is almost as varied, and a conspicuous part of it is the *frijoles*, or beans of different sizes, which, with or without rice, form a staple article of diet with all classes. *Dulces*, or sweetmeats, are in great demand among young and old, high and low, and these are consequently offered for sale in rich profusion at the *tiste* stands. *Tiste* is the most popular drink of the country. It is a compound of chocolate, parched corn meal and water, mixed to your order by a plump señorita and served in a jicara cup with a round bottom. Some members of our party professed to relish it, but after the first trial I never ordered it, when anything else in the way of liquid refreshment was to be had. Among other things of interest offered for sale in the market are elaborately carved drinking cups of cocoanut and jicara shells, Indian earthenware, hammocks and saddle-bags made of pita, a white and exceedingly strong fiber procured from a species

of agave or aloe plant, silken sashes of brilliant colors, parrots, parroquets and even monkeys.

Besides the churches, the chief of which are San Francisco, La Mercedes and the parochial, and the university referred to in the opening chapter, there are no public buildings worthy of note. There is, however, on one of the principal streets within a block of the plaza, a spacious residence upon the foundations of what was in early colonial days the vice-regal palace, a building that was standing at the time of the destruction of the city by Walker. Upon an adjoining lot, forming indeed a part of the premises, and connected with the residence by a private entrance, stands the theater of Granada, a rude wooden structure capable of seating several hundred persons. Between the building and the street is a courtyard surrounded by booths for the sale of dulces and refreshments. These booths are, however, not occupied unless there is a performance going on. The public entrance to the theater is through a quaintly ornamented stone archway, closed by a wooden gate of antique design, the only relic of the kind that survived the Walker

devastation. The entire property was purchased by a Mr. Espinoza, a short time before our arrival, for about $28,000, United States money. Connected with the university, which is of course under ecclesiastical control, and therefore circumscribed in its usefulness, is a museum said to contain some antiquities and other interesting specimens illustrative of the products of the country. I am not able, however, to speak from personal observation, as I did not find an opportunity to visit it.

Granada is a place of about 15,000 inhabitants. The proportion of whites to the total population is probably larger than in any other city of the country, and there as elsewhere on the Pacific coast, it is a rarity to see a negro or a person with negro blood in his veins. Spanish is of course the prevailing language, but occasionally conversations are overheard in English, French or German. The Indian language is still used to some extent by the Indians in their intercourse with each other, but I did not hear it spoken at all in Granada. One or two weekly papers printed in Spanish are published in the city, but they are chiefly devoted to

political controversies. Accommodations for visitors are very poor. There are two or three so-called hotels in the place, but they are hardly worthy of the name. The best is kept by a man from the United States, a native of St. Louis. In a subsequent chapter I shall speak more fully of what travelers through the country will have to expect in the way of accommodations.

I have already alluded to the railroad that connects Granada with Managua, the capital of the Republic. The distance between the two cities is about thirty miles, but the railroad is somewhat longer because it does not follow a straight line. It makes one deviation to reach Masaya, and several others to avoid mountains. The running time between the cities is two and a half hours, and the fares are $1.70, $1 and 60 cents, respectively, for first, second and third class passage. A train leaves each terminus daily at 6 A.M. and 3 P.M. It is a narrow gauge road, was built early in the eighties, and is equipped with rolling stock from the United States. It is owned by the government, which made the disparity between the first and third

class fares to induce the common people to ride. The second and third class coaches are alike, and almost the only respect in which the first class coaches differ from them, is in having the seats arranged transversely instead of lengthwise. The road has a good traffic in both freight and passengers, and pays, I was told, about six per cent. above expenses.

About halfway between Granada and Managua stands the old Indian city of Masaya (pronounced Ma-si-ah), which contains from 18,000 to 20,000 inhabitants, but was still more populous when the Spaniards discovered the country. Excepting its churches and its railroad station, it probably presents the same general appearance to-day that it did 400 years ago. There are several other distinctively Indian cities in Nicaragua, but Masaya is the largest, and typical of the rest. A point of difference between Masaya and Granada, and indeed all the other Spanish-built cities of the country, no less remarkable than the dissimilarity of the buildings, is the arboreous aspect of the former. The Indians plant trees around their houses instead of inside them. Every dwelling

house in Masaya has several shade trees about it, selected either on account of their fruit or their flowers. The Indian's love of flowers is one of the strongest and most conspicuous traits of his character. The streets are rectangular, and the houses are set back from the sidewalk, embowered in trees, and surrounded each by a plot of ground devoted to fruit or floriculture or both. The houses are generally built of bamboo reeds plastered with mud, and thatched with palm leaves. They are invariably of one story and usually divided into two rooms. On account of the patch of ground allotted to each house the town covers a large area. Like Granada it has a plaza surrounded by shops, but the center is occupied by a huge church built by the Spaniards. Whether or not the Spaniards borrowed the idea of the plaza from the Indians, it is certain that the latter built their towns with an open square in the center, which was used, as that at Masaya is to this day, for a market place. It was probably at Masaya that Gil Gonzalez was attacked by the Cacique Diriangan, who ruled over the country round about, and it is recorded of his

handful of adventurers that they retreated to the market place and there received the onslaught of the Indians. The site of the old church was therefore, no doubt, the scene of the first encounter between the invader and the natives. The Spaniards were outnumbered by about thirty to one and owed their escape, primarily to the singular preference of the Indians for making prisoners of their enemies instead of killing them; and, secondarily, to the disorder which the Spanish horses created in the Indian ranks.

The plaza of Masaya presents an animated scene in the early morning and late afternoon, when the country people bring in their produce for sale, and the artisans expose their handiwork. Then the square is filled with men, women and children, with animals and carettas laden with country produce, fruits, etc., and stands covered with manufactured articles. Masaya is a thriving and busy city, and of all Nicaragua the chief manufacturing seat. Cotton and silk cloths, hats, shoes, pottery, wooden household utensils, mats, hammocks, saddle-bags, cordage, saddles, harness, mach-

etes, and all domestic articles are made there in great quantities. On the arrival of every train women and young girls crowd the station offering for sale cakes, pies, fruits, tiste, and a variety of sweetmeats, including a delicious guava jelly put up in neat little wooden boxes.

Another remarkable fact connected with Masaya is that it has no water supply. Situated upon an elevated plateau in the midst of a volcanic region where there are no streams nor even springs, wells are impracticable, as water is reached only at a very great depth. During the rainy season water is collected in tanks and cisterns, but the supply so procured is speedily exhausted on the advent of the dry season, and recourse is then had to the volcanic lake described in the preceding chapter. The water is brought up from the lake in earthen jugs by women and girls, who climb the steep paths in the cliffs with the jars slung upon their backs in nets. These water-carriers, *aguadoras* they are called, form a distinct class and are trained to their arduous labor from infancy. They sell the water at from one to five cents per gallon, according to the distance it is carried. About

a score of years ago an engineer from the United States, named Simpson, erected a steam pump to raise water from the lake for the supply of the city, but the *aguadoras* excited so much feeling against it on the ground that it would destroy their business, that the enterprise failed to pay. A few miles from Masaya is the large Indian town of Nindiri. This and several smaller towns in the vicinage procure their water supply from the lake in the same manner as Masaya.

Managua, though covering less ground than Granada, and less populous than Masaya, is the most progressive and in some respects the most thriving city in the country. Though credited with only 10,000 population, it is the scene of more business activity than Granada, and is the financial as well as the governmental center of the republic. It is situated on the western shore of Lake Managua, near its southern extremity. A the time of the conquest the Spaniards found a populous city on this site, and they rendered its Indian name Managua. The first reports sent to Spain concerning it gave its length as nine miles, but a chronicler, who visited the

country in 1529, says those reports were gross exaggerations. The city had been destroyed and well nigh depopulated by murder, or exportation of the inhabitants as slaves, at the time of his visit, but he reached the conclusion that it originally contained 40,000 inhabitants, of whom 10,000 were archers or slingers. When he saw it, only six years after the conquest, "it was the most completely abandoned and desolate place of the government," and contained only "10,000 souls, of which 600 are archers."*

Managua was designated as the place of meeting of the Congress of Nicaragua in the original constitution adopted after the dissolution of the Central American Confederation in 1839. The

*These figures, which are quoted by Squier from Gonzales Hernandez de Oviedoy Valdez, suggest a mistake somewhere possibly in the printing or translation. According to the first statement 25 per cent. of the population were archers, but that is far too large a proportion for men of all arms, much moreso for one branch. The proportion indicated in the second statement, 6 per cent., is a more reasonable one, but at that ratio, assuming that the city could muster 10,000 archers before the Conquest, its population must have been in round numbers about 170,000. This conclusion is warranted by the chronicler himself, who says further on that from all he had heard he was led to conclude "the country was so populous that the inhabitants may be said to have fairly swarmed."

circumstances which determined its selection were the jealousies and consequent bickering between Leon and Granada. Still, although the congress met in accordance with the constitutional provision at Managua, Leon was the real seat of the government until the re-establishment of order in 1859, after the civil war which culminated in the usurpation of Walker. Managua, by reason of its central position, is better suited than either of the other cities to be the capital of the country. The government houses, barracks, etc., are all on the plaza. They are all two-story buildings constructed of tufa, and not remarkable for beauty of design. I did not visit the halls of congress, for that body was not in session at the time of our visit. The President's reception room in the capitol is a spacious apartment. President Sacassa received our party in state. We were ushered into his presence by a military officer in full uniform. The President, who was a tall, portly man with a swarthy complexion and heavy features, but rather benignant expression, stood at one end of the hall between two of his ministers, while at the other end, facing him, stood

three military officers of high rank, in showy uniforms. The President and his ministers wore frock coats of black broadcloth. The former shook hands with each of us and the latter followed his example. After the hand-shaking was finished we were invited to seats in chairs ranged along the sides of the room, while the President and his ministers seated themselves in a transverse row. The President spoke no English, so what little conversation we had with him was carried on through the medium of an interpreter, which gave rather a constrained character to the occasion. Champagne was served without ice, although an abundance of the latter was to be had in the city. Armed sentries paced the interior veranda and the sidewalk before the entrance of the building. Altogether the place had to our republican eyes more the appearance of a military post than the executive department of a constitutional government.

Managua is the only city in Nicaragua that is artificially supplied with water, and the only one also possessing an ice machine. Ice enough is produced to supply all of the principal cities

THE PRESIDENT'S PALACE IN MANAGUA, CAPITAL OF NICARAGUA

on the west side of the lakes, at five cents per pound, and the machine is a veritable gold mine to its owners. The railroad repair shops are also located here, and there are besides a soap factory, a mill for making pita, a fiber equal in strength and superior in quality to manila, and a number of small factories of domestic wares. Here likewise are the central offices of the government telegraph system, which gives a cheap and tolerably efficient service throughout the country. I may mention too, in this connection, that Nicaragua has a very fair postal service. Several small steamers of English build, owned by the government, ply between Managua and Momotombo, thirty-three miles higher up the lake, to connect the railroad from that place to Corinto with the section between Granada and Managua.

The Bank of Nicaragua, which has branches in all of the cities and controls the finances of the country, has its headquarters in Managua. It was established in 1888 by Mr. J. Francisco Medina, at the time of my visit Nicaraguan minister to France, who had previously originated the banking systems of Guatemala and

Salvador. The authorized capital is $2,000,000, of which $625,000 has been paid in. It has notes in circulation to the amount of $465,000, and deposits aggregating over $727,000. Its notes are receivable for all government dues, and the dividends earned constitute about nine per cent. per annum on the capital paid in. The stock is not on the market. The manager of the bank was Mr. Colin W. Campbell, a capable young Englishman. The banking business in these Central American countries is highly renumerative. The stock of the Guatemala Bank is at a premium of two hundred per cent., and that of the Salvador bank at a premium of sixty per cent. There is another bank with headquarters at Leon, the Agricultural and Mercantile, but it has less capital and influence than the Bank of Nicaragua.

Concerning the buildings of Managua there is little to say. As a general thing they are like those of Granada, but they show here and there a tendency to departure from uniformity of style, and one resident of more Northern tastes was actually erecting, at the time of my visit, a Queen Anne cottage upon an elevated

site overlooking the lake. Occupying the entire eastern side of the plaza is a large church with a double turretted façade, in which a military mass is said every Sunday morning for the benefit of the President and his cabinet. The military band, which, by the way, is handsomely uniformed and composed of excellent musicians, invariably assists at this mass. The traveler fares better in Managua than anywhere else in the country. There are three hotels, two of which, one kept by an English lady, the other by an Italian, furnish excellent meals, though the sleeping accommodations could be greatly improved.

The little steamers which ply on the lake are not, to say the least, provided with luxurious passenger accommodations, but they are swift, making the trip between Managua and Momotombo in about three hours, and in that climate, unless rain is falling, the deck is preferable to the cabin. The sail up the lake is most charming. Towering headlands in the foreground, with blue mountain peaks in the distance on every hand, are the chief features of the scenery until Managua becomes a blurred

line on the horizon, and a sudden turn of the coast line reveals the majestic, somber, smoking Momotombo, and the beautiful mound-shaped Momotombito, like a suppliant kneeling at his feet. Momotombito stands at the entrance to a broad bay about ten miles long, at the head of which is the village of Momotombo. Once within this bay half a dozen peaks of the Maribios range are visible from the deck of the steamer. The village is a mere hamlet. An eating house, kept by a German, and less than two score huts and shanties constitute the place outside of the railroad station. Passengers are allowed ample time to get a meal, which is not bad, though they have to walk about a quarter of a mile through sand almost ankle deep, and under a sun almost hot enough to cook an egg. It was on the shore of the lake near this village, by the way, that Leon was first built. It was founded in 1523 by Hernandez de Cordova, the conqueror of the country, and subsequently distinguished for the only honest effort ever made by the church to arrest the barbarous treatment of the Indians. In 1549 Antonio de Valdivieso, third bishop of

Nicaragua, attempted to exert the influence of the church for their protection, and was promptly murdered by Hernando de Contreras, who, conjointly with his brother Pedro, was then governing the province. After that the ecclesiastics appear to have attended strictly to their masses, but it is some comfort, even at this distance of time, to recall that the precious pair of tyrants were themselves put to death shortly afterward for rebellion against the crown. The chronicles record that the city was visited by a succession of calamities after the murder of the bishop, and finally in 1610 the inhabitants abandoned it in a body and marched to the Indian town of Subtiaba, about thirty miles distant upon the plain, and there laid the foundations of the existing city.

Leon is the largest city in Nicaragua. It claims 50,000 inhabitants, and judging from the extent of ground it covers, as well as the way in which the people are crowded together, frequently four or five families in a single house, the claim seems to be warranted. It is situated in the midst of the elevated plain of the same name, some distance north of the head of

Lake Managua, and about sixteen miles from the Pacific Ocean. On either side of the city is a ravine about 100 feet deep, the bed of a mere rill in the dry season, but of a considerable stream in the wet season. The greater part of the water used in the city is brought by *aguadoras* from these ravines. There are some wells, but the great depth to which they must be sunk in order to reach water makes them too expensive for general use. I saw one nearly 200 feet deep, from which the water was drawn by a rude drum turned by a mule. In general, the buildings resemble those of Granada, but there are more of two stories, and one residence which attracted my attention by its Moorish style was three stories in height. On its southern side the Spanish built gives place to the Indian built city, and there it has the open and umbrageous aspects of Masaya. There also the ground surrounding each house is fenced in by a hedge of pinuela, a plant with prickly leaves closely allied to the pineapple.

The most imposing building in Leon is the cathedral of St. Peter, one of the largest edifices in all Spanish-America. It was thirty-seven

years in building, and finished in 1743. It stands on the north side of the grand plaza and covers an entire block. The front is surmounted by two massive square towers, one on each side of the lofty, arched nave. The style is composite with predominance of the Moorish. It is built of large blocks of stone, and because of the great strength of its walls and roof, which last is composed of arches of solid masonry, it has frequently been used as a fortress by one or the other of the warring parties in the civil wars to which the country was subject half a century ago. The towers are over 100 feet high, and from their summits a magnificent view is to be had of the surrounding country. On the east side of the plaza are the bishop's palace and the University of Leon, which are not architecturally remarkable; on the southern side, a broad two-story building, which was formerly the government house; and on the western side a similar structure that was the headquarters of the army, and is even now used as the barracks of the garrison, for there is a garrison, if only a corporal's guard, in every town. There are fifteen to

twenty churches in the city, the largest of which are La Merced, the Recoleccion, Calvario, and San Juan de Dios. All have bells, and as if there were a provision in the ritual against sleeping after four o'clock in the morning, every bell begins to ring at that hour. The clatter which ensues is continued for about three hours, and though it may be the sweetest of religious music to the sheep within the fold, it is an infernal nuisance to the stranger within the gates.

There are some large and well stocked-stores in the city, and it seems to have a large trade both in foreign and domestic manufactures. The Pacific Mail steamers plying up and down the Pacific Coast touch at Corinto and afford regular and speedy communication with San Francisco, so that there is considerable trade between the two cities. There are several hotels in Leon, but they are more in the nature of drinking and eating-houses than places for the accommodation of travelers.

The railroad from Momotombo to Corinto is sixty-four miles long, though the distance between the two places on a straight line is much less. Leon is about halfway by the railroad,

which passes through several towns west of that city, the most important of which is Chinandega. Chinandega is a place of 12,000 inhabitants. Except its central part, which is built like Granada, it is an Indian city like Masaya. Before the railroad was built it had a much larger foreign commerce than Leon, and was probably the most thriving city in the country; but now Leon and Managua have come in for a share of the trade of which it at one time had a practical monopoly. Corinto, a place of about 1,200 inhabitants, is built on a sandy point near the entrance to the port of Realejo, and is a mere receiving and forwarding station. The port, which is a bay protected by an island in its mouth, is a deep, safe, and commodious haven.

San Juan del Sur, the other Pacific port, about 150 miles further south, is much smaller and less protected. It is a beautiful, almost circular, bay with a narrow entrance between two giant promontories. The town contains perhaps 1,000 inhabitants, but is a mere collection of wooden shanties. It derives some importance, however, from being a station of the Cen-

tral and South American cable, and the fact that a Pacific Mail steamer touches there twice a month. The foreign trade of Rivas, which is not very large, is done through San Juan del Sur. Rivas is situated upon a plain less than fifty feet above the level of Lake Nicaragua. It is almost due west of the southern extremity of the island of Ometepec and Medeira, about three and a half miles from the lake and twelve from the Pacific. The distance to San Juan del Sur, which is to the south, is about seventeen miles, and goods are transported between the two places entirely by carettas, for a part of the distance over wretched roads. The population of Rivas is estimated at 8,000, but the city is situated in the heart of the most densely populated rural district in Nicaragua, and it has besides several large Indian towns in its immediate neighborhood. Although the old chroniclers do not speak with particularity of the population of Rivas, or Nicaragua as it was then called, at the time of the conquest, there is a local tradition that it once contained about 1,000,000 inhabitants. The tradition, however, may refer to the district instead of the city

proper, as it does not seem likely that a city so large could have escaped specific mention in the chronicles of the Spaniards, especially after what we have seen they said about Managua. They distinctly state, however, that the country round about was densely populated, and existing conditions indicate that it must have been. No part of the Pacific coast of Nicaragua suffers so little from drought as this, and consequently, the soil is even more productive than that of other localities. There are many fine cacao plantations throughout the district, and the cacao produced there is regarded as the best raised in the country.

Architecturally Rivas presents nothing of note. Like Chinandega it combines the Spanish and Indian types of building. Some of the most influential families of the country reside there, and it has the distinction of having furnished several of the presidents of the republic. It also has one sign of progress possessed by no other city in the country except Greytown—a horse railroad, which connects it with San Jorge, its port on the lake, three and a half miles away. San Jorge is a thoroughly

Indian town in everything, except its storehouse on the shore of the lake, and its fine wooden pier, which extends several hundred feet into deep water.

The towns east of the lakes are mostly Indian in character, as the Spanish influence, except in the matter of religion, was less vigorously exerted there than in the country west of the lakes. The largest of them is Matagalpa, which contains about 10,000 inhabitants. Libertad, a place of 5,000 inhabitants, is the principal mining center of Chontales, and indeed of Nicaragua. There are many gold and silver mines in the neighborhood, worked chiefly by Englishmen and Frenchmen, and some of them have been very productive. Santo Domingo, with less than 1,000 inhabitants, about fifteen miles east of Libertad, is a distinctively mining town, and the only place of the kind in Nicaragua.

CHAPTER VII.

THE PEOPLE.

THE French enjoy the reputation of being the most polite people, but they are not more polite than the Nicaraguans. The speech of the common people abounds with compliments, invariably so neatly turned as to leave no room for doubt that they are the voice of nature and not of art. The peasant encountered on the road greets you with a pleasant salutation, while should you enter a house of high or low degree the owner thereof, in the customary phraseology of the country, at once proceeds to place it and everything pertaining to it at your disposal. And this is not mere affectation on the part of your host; it is the spontaneous expression of a nature both kindly and hospitable. In truth, the Nicaraguans are an urbane and amiable people. On the whole I was much more favorably impressed with the Indians and ladinos, or mes-

tizos (mixed whites and Indians), than with the people of unalloyed Spanish descent. While, of course there are many admirable exceptions, the latter, as a rule, are much less industrious and amiable than the former.

But it is interesting to note how the conquering and conquered peoples have mutually influenced each other. The Spaniards, as their history conclusively proves, are naturally a cruel people, though courteous in manner and much given to polite forms of speech. The Indians, on the other hand, were pacific and kindly when the Spaniards found them. Now the Spaniards have thoroughly imbued the Indians with their good manners and flowery forms of speech, while the Indians have succeeded in softening and mellowing the Spanish nature. And yet it is impossible to recall the atrocities to which the Indians were for generations subjected without marveling that they did not imbibe the cruelty instead of the better qualities of their conquerors. That is a fact which must forever shed luster on the Indian name. It will not be forgotten either that the immanent dignity of the Indian saved him from becoming a slave.

After the Spaniards had conquered the country they attempted to enslave the Indians, but the latter, though unresisting, could not live in bondage. They pined and died so rapidly that the country was in a short time almost depopulated, and the conqueror, appalled at the result, abandoned the experiment for very shame.

Another fact that reflects credit on the Indian character is the inefficacy of centuries of ill-usage to make him morose and revengeful. Familiarity with his history since the conquest, leads the visitor to expect of him a sullen and inimical disposition toward the white man, and so it is with no little surprise that you find him a genial and thoroughly good-natured fellow. He is, moreover, a jovial fellow; song and laughter are his constant companions. Wherever the washerwomen and aguadoras congregate; upon the beach at Granada; on the margin of the lake at Masaya; around the lakelets at Managua; in the ravines at Leon, there is incessant talking and laughing, not by a good deal confined to the women. In the market places, at the railroad stations, indeed at all public gatherings, where silence is not required, the same

fact is noticeable. In addition to their love of fun, their sense of humor is extraordinarily keen. Quick to see the ludicrous, they never miss a joke, and the slightest suggestion of the ridiculous throws them into convulsions of laughter. A monocle, worn by an Englishman in our party was everywhere an object of the closest scrutiny that never failed after the lapse of a few moments to excite the most extravagant merriment. A consequence of this mental trait is that everybody is nicknamed for some personal peculiarity, and some of the nicknames are extremely clever. Another consequence is the ready coining of general terms designating persons according to their occupations: thus *caretteros*, men who drive carettas. All of the men connected with the canal are called *canalleros*. When the first engineering party established its headquarters at Rivas, it included only one woman, the wife of the officer in charge, and a short time after her arrival she received a letter through the post office with no other address than La Canallera; literally, the woman of the canal. The humorous characteristic is confined almost exclusively

to the Indians and half-breeds. The whites have scarcely a trace of it. Like their darker brethren, however, their wit is ready and pungent, though not often delicate. A few years ago one of their prominent politicians, sent as minister to France, was for some service to that country decorated with the Iron Cross. When one of his political opponents heard of his distinction, he remarked: "The order of things is changed. In old times they used to hang thieves on crosses. Now they hang crosses on thieves."

I have spoken elsewhere of the honesty of the boatmen and packmen who carry specie and merchandise from the interior to the eastern coast. The caretteros of the Pacific slope are equally trustworthy. Indeed the honesty of the whole people is remarkable. I was told that robberies are of the rarest occurrence, and the manner in which the people live affords abundant confirmation of the statement. Locks and keys, bolts and bars are but little used. It is a common thing for shopkeepers to let customers wait on themselves. While in Rivas, I stayed at the house of a widow who sold tobacco and

cigarettes. The cigarettes were kept in a jar upon a table in one corner of the sala, and upon the same table was a cup in which the money received for the cigarettes was left during the day. The door of the sala was always open and there was seldom any one in the room to look after the sales. Passersby who wanted cigarettes helped themselves, put the price of their purchase in the cup, making change when necessary, and went their way. The old lady, who was a stately dame and almost a full-blooded Indian, had not the slightest fear of robbery, even by the beggars that came to her door. It is worthy of remark, too, that the beggars never went away empty-handed. Concerning these beggars, by the way, there is a queer custom in the country. On one or two specified days in the week they are permitted to go from house to house soliciting alms, but they are liable to arrest for begging on other days. However, I saw very few beggars anywhere.

In personal appearance there are marked differences between the two races. The color of the Indian is that of the Chinese, warmed by a touch of red. The features, however, are very

different. The eyes are horizontal and the nose aquiline. Except for a slight mustache, the men are beardless. The hair is jet black, and is worn by the men cropped short at the neck; by the younger women in two long plaits down the back, and reaching generally below the waist. The ordinary dress of the women is a skirt of dark cotton material, reaching to the ankles, and a loose blouse-like waist, cut low in the neck, without sleeves, but with narrow straps over the shoulders. The arms and much of the bust are consequently exposed. The holiday costume is made in the same style, with the addition of a short sleeve, ruffled, or trimmed with some sort of lace, but the material of the waist is finer and the skirt is of figured cotton or silk. Thrown over the shoulders is a silk scarf of bright color, generally purple or scarlet. The women never wear hats, and nine-tenths of them go barefooted on all occasions. They are extremely fond, however, of wearing flowers in their hair. The favorite flowers for this purpose are red, scarlet, or the more brilliant shades of pink. They are worn in sprays, or wreaths, and frequently entwined

in the plaits at the back. The ordinary dress of the men is a white cotton shirt, often worn outside of the trousers, and trousers of coarse brown, or bluish, cotton cloth, that reach only a short distance below the knee. Men engaged in hard physical labor seldom wear anything but the short trousers. The men, like the women, generally dispense with the use of hats, and as a rule they also go barefooted. On special occasions their dress approaches nearer to the civilized standard.

The men are strong, capable of great endurance and often fine looking. The women, between the ages of fifteen and twenty-five are possessed of admirable figures and are frequently extremely attractive in face. They begin to bear children even before they reach the age of fifteen, usually bear a great many, and lose their good looks before they are thirty. One of the results of the long Spanish domination is that so far as the Indians and half-breeds are concerned, the marriage rite is regarded as much less essential than the baptismal.

In speaking of the white women I cannot do better than begin with the following quotation

from Squier: "The women of pure Spanish stock are very fair, and have the embonpoint which characterizes the sex under the tropics. Add the superior attractions of an oval face, regular features, large and lustrous black eyes, small mouth, pearly white teeth, and tiny hands and feet, and withal a low but clear voice, and the reader has a picture of the Central American lady of pure stock. Very many of the women have, however, an infusion of other families and races, from the Saracen to the Indian and the negro, in every degree of intermixture. And as tastes differ, so may opinions as to whether the tinge of brown, through which the blood glows with a peach-like bloom, in the complexion of the girl who may trace her lineage to the caciques upon one side, and the haughty grandees of Andalusia and Seville on the other, superadded, as it usually is, to a greater lightness of figure and animation of face—whether this is not a more real beauty than that of the fair and more languid señora, whose white and almost transparent skin bespeaks a purer ancestry. Nor is the Indian girl, with her full, lithe figure, long, glossy

hair, quick and mischievous eyes, who walks erect as a grenadier beneath her heavy water jar, and salutes you in a musical, impudent voice as you pass—nor is the Indian girl to be overlooked in the novel contrasts which the 'bello sexo' affords in this glorious land of the sun."

The white women, and indeed all the women who have much white blood in their veins, dress very differently from the Indians. The waists are made with high neck and long sleeves and the skirts so long as to reveal only an occasional glimpse of the feet. These women never go barefooted, but they prefer colored satin slippers to shoes. They seldom go on the streets until late in the afternoon, and then generally in parties of three or more. Like the Indian and half-breed women, they do not wear hats, but they are rarely seen abroad without a black lace shawl or something similar thrown over the head. I saw very few really pretty women among the pure whites. Although as a rule possessed of dainty and well-shaped features, their faces lack that important element of beauty, color. It is much more common to see a handsome white man. The

men are careful, even fastidious, in their dress. Pongees and white and colored linen are the favorite materials.

Manners are simple yet constrained, so far as the relations of the sexes are concerned. In the salas the chairs are ranged along opposite walls, and when visitors are received the men sit in one row and the women in the other. There is a tradition to the effect that the señoritas were wont to sit within the balconied and grated windows and converse with their admirers, who stood without, but I saw nothing to confirm it. On the contrary, the sala, or the veranda in front of it, seemed to be the favorite place for conversation. Even the wealthiest families live plainly. Compared with our northern homes, the houses are very poorly furnished. The best furnished salas contain little besides a few cane-seated chairs, except a small table, and are almost bare of ornaments. The sleeping apartments are also destitute of many articles of furniture deemed indispensable in any moderately appointed dwelling in the United States. The rooms being few in number even in the most luxurious homes, several

persons are of necessity forced to sleep in each, as the families are generally large. It follows that the home arrangements are sadly deficient in privacy. Meals are served, in almost every household, on the side of the interior veranda least exposed to the sun. Coffee is served immediately after rising, and as everybody rises early the time for it is between five and seven o'clock. Its only accompaniment is bread or crackers and butter. Breakfast, a substantial meal, follows between 10 o'clock and noon, while the time for dinner is between 4 and 6 P.M. The usual bill of fare in the homes of the whites includes a variety of fruits, frijoles (red beans) boiled with or without rice, rice, a salad of some sort, generally of the alligator pear, poultry, beef or some other kind of meat. The frijole resembles in taste the cow-pea, common in the Southern part of the United States. Plantain fritters are a very popular and palatable dish. The alligator pear makes one of the finest salads ever tasted. It is about the size and shape of a large pear and consists of a thick coat of pulp on a large, hard nut. The pulp, which separates readily from the nut, is a rich yellow,

covered by a thin green skin. It is sliced into chips and dressed with hard-boiled egg, oil, vinegar, etc. The name, which is absurdly inappropriate, is of queer origin. The fruit is borne by the *Persea gratissima*, which the Aztecs called *ahuacatl*. The Spaniards, in trying to pronounce the Aztec name, made it "avocado," and later still the American and English sailors converted avocado into alligator, the name by which the fruit is now known to commerce.

The Indian bill of fare is much less varied than that of their white fellow citizens. Frijoles, rice, and fried plantains are their staple dishes. Their favorite bread is the tortilla, or corn cake, which they make to-day exactly as their forefathers made it before the conquest. The corn is boiled in water containing a slight infusion of ashes or lime to loosen the husk, which is then washed off by rubbing the grains between the hands in running water. After the husk has been removed the grain is placed upon a flat, slightly concave stone, called metlate, after the Aztec *metlatl*, and crushed by passing over it another stone, like a rolling pin.

A fine flour is thus produced, and this, after mixing with water and a little cheese, is made into cakes about a quarter of an inch thick and ten inches in diameter, which are baked in an earthenware pan. The tortilla (pronounced tor-te-lia) is light, nutritious and not unpalatable. The Aztecs were accustomed to bury household implements with their dead, and metlates of the same pattern as those in use at the present time are found in graves, perhaps thousands of years old. The larger part of the drinking vessels, wash-bowls, etc., of the Indians are made of the shell of the jicara nut. Jicara (pronounced hickory), which is the Spanish corruption of the Aztec xicalli, means chocolate cup, and is the analogue of the Italian *chicchera*, a teacup. The tree which bears the nut grows wild on barren plains called jicarals, from its presence, equidistant from each other, as if carefully planted. It attains the height of an ordinary apple tree, and the fruit, which is attached to the trunk and branches by a short stem, varies in size and shape from a hen's egg to a large pumpkin. The larger fruit is secured by cultivation. The shell is thin but very hard

and tough, and is filled with seeds, which when bruised make a cooling drink, and are fed to fowls, and in dry seasons to horses and cattle. Except the largest specimens the vessels made from the jicara nut will not, because of their shape, stand alone, and socketed pedestals of wood or stone are made to hold them. The cups are often elaborately and beautifully carved on the exterior surface. The jicara nut supplied the form of the ancient Indian pottery, and the same pattern is still followed. Coffee is taken at each meal, and chocolate or tiste frequently between meals. Tobacco smoking is common to all classes and both sexes, but while the white women generally smoke cigarettes, the Indian and half-breed have a decided preference for the cigar. Pipe smoking is rare.

Public amusements are few and infrequent. Formerly religious festivals furnished the chief popular diversions, but the church has lost its hold on the people, and the festivals have correspondingly decreased. Squier, at the time of his visit, 1850, found that there was a festival for almost every day in the week; now, however, days and even weeks elapse without the

public observance of any festival whatever. Even the celebration of the Passion Play in Easter week has degenerated into a broad burlesque. True, the priests still possess considerable influence over the women, but the majority of them live in more or less open concubinage, and are generally held in undisguised contempt by the men. The favorite amusement with the men is cock-fighting, and the principal day for holding mains is Sunday. I was told that more than one priest was in the habit of shortening high mass and hurrying off, with a cock under each arm, to the nearest pit. Usually the fights are held in the open street, before some drinking saloon, and all of the spectators who are able wager small sums of money on the result. Apart from the cock-fights I did not see any public gambling on the Pacific coast, but it is said that a good deal of card playing for money is done in private houses. Gambling, except at Greytown, is illegal, and so there are no houses where it is publicly carried on. Occasionally a theatrical or operatic company visits the country, and their performances are always well attended, for the people are fond of music and

the drama. There was a company of Spanish players at Granada while I was there, and their acting struck me as above the average of strollers.

The Indians in their own communities still observe some of their ancient festivals, which, if we may credit one of the old chroniclers, furnished occasions for getting drunk on *chicha*, a drink made from fermented corn and sugar. I did not have an opportunity to witness an Indian festival, so cannot say that it is not an occasion for drunkenness, but as I have said elsewhere sobriety is a noticeable trait of the Indian in his everyday life. Mr. Belt mentions a singular sort of harvest festival held by the Indians at a town in Segovia, called Condego, on May 15th, and I will give his description of it: "For some weeks before this date, they catch all the wild beasts and birds they can, and keep them alive. During the night preceding the feast day they plant the plaza in front of the church with full-grown plants of maize, rice, beans, and all the other vegetables that they cultivate; and among them they fasten the wild beasts and birds that have been collected; so

that the sun that set on a bare, weedy plaza rises on one full of vegetable and animal life."

He mentions in the same connection that the great attraction at the festival the year before his visit was a young jaguar, which had grown so large the people were afraid of and at a loss what to do with it, yet instead of killing they kept it in a house with a dog which had caught it and to which it was greatly attached. This treatment of the jaguar illustrates a conspicuous trait of the Indian character, his fondness for animals. There is not an Indian household without from one to half a dozen pets, either of birds or animals or both. One of their pets has been eagerly adopted by the whites. It is called the hour-bird, from the fact that it utters a harsh, peculiar cry once every hour. It is a large wader of the rail family, and is a very good bird to have about the house, because he is extremely fond of mice, cockroaches, scorpions, etc., exceedingly expert in catching them, and also because the entrance of a stranger into the premises during the night time will make him rouse the entire neighborhood. An old Indian custom is perpetuated too in the

paseo al mar, or migration to the sea, which takes place early in March toward the close of the dry season. The Indians went to catch fish and gather a peculiar shell from which they made a purple dye rivaling the lost Tyrian purple, but the whites go now to escape the hot, dusty weather of the plains. It lasts from six to eight weeks, and for the people of Leon is a regular camping-out expedition, while those of Rivas have a primitive seaside resort in San Juan del Sur. When our party arrived there, about the end of April, the season was practically over, but there were still more sojourners in the place than the buildings could accommodate, and some of us were forced in consequence to sleep upon the floor of a storehouse with a piece of matting for a mattress.

I have already intimated that accommodations for travelers are very poor. The prevailing idea of hotel-keeping seems to be to furnish the stranger within the gates food and shelter. Such trivial matters as privacy and comfort have never been thought of. The buildings are great, barn-like structures with few rooms, into which guests are crowded to sleep without re-

gard to race, condition, or previous acquaintance. There are never less than three beds in a room, and as a rule more than half a dozen, and the fact that one bed is taken does not deter mine host, for a moment, from filling all the others without consulting the wishes of the first comer. In short, if the visitor is fastidious enough to require a room to himself he is, in nine cases out of ten, confronted with the necessity of renting at least a fourth of the hotel. And then the beds! I do not believe there is a decent bed in all Nicaragua, unless it has been carried there by some person from the United States or Europe, for his own use. Plain cots, generally of cotton canvas, but not infrequently of rawhide and harder than stone, are the best that the traveler can expect.

Traveling, except on the line of the railway, is usually done on horse or mule-back, but it is not at all uncommon to see a family party journeying in a hide-covered caretta. Indeed, this remarkable family carriage is frequently seen at the smaller railway stations. It is a rough, strong cart-frame, set on two broad wooden wheels about four feet in diameter,

covered with hide stretched over hoops, and drawn by two oxen yoked by the horns instead of the necks. While watching several half-breed women stowing themselves away in one of these vehicles at a station near Leon, a member of our party asked an Indian, who sat near him in the car, how fast such a caretta could travel. The Indian replied without hesitation: "Three miles in a quarter of an hour." As a matter of fact the best time it can make is about three miles an hour. The incident though trivial, serves to illustrate a peculiarity of the Nicaraguan character. The Indian is very careful to conceal his ignorance, and his ready wit often tempts him, if he be not possessed of the information sought, to give a misleading answer as a good joke. On another occasion the same gentleman, having asked how the large blocks of tufa, for building purposes, were procured, was informed that the Indians made them. But to return to the caretta; it is used altogether for the transportation of merchandise between places not connected by water or railroad. The freight caretta is generally uncovered, is drawn by four oxen, and attended by

three men, one of whom walks ahead of the oxen, which follow him at every turn; another sits upon the cart with a long pole armed at the further end with an iron spike or a bit of pointed horn for prodding the oxen; the third man walks behind the cart. These men are the caretteros already referred to.

At all of the towns along the Pacific coast there is considerable trade in foreign commodities, but in consequence of the heavy duties levied by the government on imports, the prices of these articles are everywhere much higher than at Greytown. The duties are higher on luxuries than on necessities and the latter are correspondingly cheaper. Liquors imported in glass pay duty on the weight. A bottle of whisky, for example, pays ninety cents duty. The duty on beer, which is imported only in glass, is somewhat less, but high enough to make the selling price absurd. It is much liked by the people and they use a good deal of it, notwithstandng that they have to pay from thirty to fifty cents for a pint bottle. There are no breweries in the country, and the greater part of the beer used is imported from the

United States, though some is also procured from Germany. There is an unmistakable demand for United States products, but much complaint of the methods of our manufacturers. Besides being accused of sometimes palming off old stock on buyers for that market, it is said they take no pains to suit the tastes of the people, or to protect the goods against risks peculiar to the climate. A merchant of Rivas told me that he preferred American biscuits, but stale or burnt stock has sometimes been sent him, and when the stock was good the cans were imperfect, so that insects finding their way through small apertures in the latter destroyed the contents. The English manufacturers, on the other hand, he said, are careful to protect their customers in all of these particulars. One article from the United States, however, gives universal satisfaction. That is the sewing machine. One is to be found in almost every home, and it is said to have become a custom of the country for a newly married man to present his bride with a sewing machine before they go to housekeeping.

A good deal of California wine is sold in the

country, and the demand seems to be growing. The sweet wines are generally in greater demand than the sour wines or clarets. A high-priced article is imported tobacco. A two-ounce package of smoking tobacco such as is sold in the United States for ten cents, cannot be bought for less than fifty cents. A large quantity of tobacco is raised in the country, but it is poorly prepared. The most acceptable form in which it is offered to the consumer is a long, thin cigar, called the *puro*, which sells for ten cents a dozen.

The production of tobacco and of aguardiente, a brandy made from sugar-cane, are government monopolies, and among the chief sources of public revenue.

While the whites are generally engaged in trade, nearly all of the industries of the country are carried on by the Indians. They are the tillers of the soil, and the sole manufacturers of many articles, as cloth, palm and "Panama" hats, variegated mats, cord, hammocks, rope, and pottery. In some places at least, most, if not all, of these industries, are carried on with the primitive means. In the

department of Segovia the wooden plow with iron shoe, brought over by the Spaniards immediately after the conquest, is still the only one in use. The Indians, it will be remembered, had no beasts of burden before the advent of the Spaniards, and were consequently unacquainted with the use of the plow. Pita, and the cord and rope into which it is worked up, are everywhere made to-day as they were made before the conquest. An Englishman devised some machinery for separating the pita from the leaves and stems of the agave plant, which produces it, and a set of this machinery, purchased by the government, had been lying at Managua, unset-up, for some time previous to our visit. On some of the larger estates along the west coast, they have improved, though not the latest, machinery for making sugar, but east of the lakes the old-fashioned wooden mill and open pans for boiling are everywhere employed. Mr. Belt thinks that sugar-cane was unknown to the Aztecs. It is not mentioned by any of the chroniclers of the conquest, and, unlike maize and cacao, there is no Aztec name for it. The Aztecs made sugar

from the stalks of maize. All of their pottery is made to-day precisely as it was made at the time of the conquest. Among the useful articles of earthenware they make is a jar for cooling water, now generally called a "monkey." It is porous, and being filled with water and set in a shady spot where the wind can blow on it, the moisture which covers the outer surface is evaporated, so the water within is speedily cooled and kept cool.

An important and also interesting industry is the cultivation of cacao. Cacao, often improperly called cocoa, is the bean from which chocolate is made. It is borne by a low, bushy tree, in pods about the size and shape of a large cucumber. The tree takes about seven years to bear, and requires shade. In the early stages of its growth it is shaded by plantain trees, and subsequently by the coral tree, a species of *Erythrina*, which because of its use for shading the fruit tree, is called by the natives cacao *madre*, cacao's mother. The coral tree grows from forty to sixty feet high, and at the beginning of April its crown is a mass of bright, crimson flowers, fairly dazzling

to the beholder when the sun is shining on it. At this time a cacao plantation is a wonderful sight. The cacao bean was used by the Aztecs as money, and it is still used by the Indians of Nicaragua in some places for making small change. The Mexicans played with rubber balls before the advent of the Spaniards. I have already mentioned the fact that the rubber of Nicaragua is made from a different tree from that which produces Brazil rubber. Rubber still bears in Nicaragua the Aztec name *ulli*, and hence the gatherers are called *ulleros*. The tree from which it is taken, *Castilloa elastica*, a species of wild fig, is found in the forests of the Atlantic coast.

To procure the rubber, the ulleros "first make a ladder out of the lianas or 'vejuccos' that hang from every tree; this they do by tying short pieces of wood across them with small lianas, many of which are as tough as cord. They then proceed to score the bark with cuts, which extend nearly round the tree like the letter V, the point being downward. A cut like this is made about every three feet all the way up the trunk. The milk will all run out of

a tree in about an hour after it is cut, and is collected into a large tin bottle, made flat on one side and furnished with straps to fix on to a man's back. A decoction is made from a liana (*Calonyction speciosum*), and this on being added to the milk, in the proportion of one pint to a gallon, coagulates it to rubber, which is made into round, flat cakes. A large tree, five feet in diameter, will yield when first cut about twenty gallons of milk, each gallon of which makes two and a half pounds of rubber. I was told that the tree recovers from the wounds and may be cut again after the lapse of a few months; but several that I saw were killed through the large Harlequin beetle (*Acrocinus longimanus*) laying its eggs in the cuts, and the grubs that are hatched boring great holes all through the trunk. When these grubs are at work you can hear their rasping by standing at the bottom of the tree, and the wood-dust thrown out of their burrows accumulates in heaps on the ground below.

"The government attempts no supervision of the forests: any one may cut the trees, and great destruction is going on among them

through the young ones being tapped as well as the full-grown ones. The tree grows very quickly, and plantations of it might easily be made, which would in the course of ten or twelve years become highly remunerative."*

* "Belt, The Naturalist in Nicaragua."

CHAPTER VIII.

ARCHÆOLOGY.

THE birthplace and origin of the people who created the wonderful civilization the Spaniards found in Central and South America are shrouded in mystery. They differed radically from the aborigines of America and were evidently not related to any of the peoples of Europe, Africa, or Asia. Their own traditions show that they came from the northward, but are silent both as to the name or location of the land of their nativity.

On the eastern coast of Nicaragua was another, more warlike and far less civilized, people who were not to the country born. Those were the Caribs who peopled the islands of the Caribbean Sea and many of the Antilles. Some of their characteristics correspond with the meager hints tradition has handed down to us concerning the inhabitants of the lost Atlan-

tis. Recent examinations of the bed of the Atlantic have revealed the existence of a vast submerged plateau, about midway between Europe and America, answering to the position assigned by tradition to the vanished island. Tradition usually conceals a crystal of fact under an efflorescence of fable, and thus the story of Atlantis seems to have substantial basis. Belt ingeniously, and plausibly, accounts for the submersion of the island by calculating that at the end of the glacial period, the sudden release of the water held in confinement by the ice on the uplands, raised the level of the oceans many feet and thus engulfed vast areas that had hitherto been dry land and the seat of populous communities. Cuba, and possibly other of the West Indian islands, which up to that time had been a part of the American continent, were then cut off, and Atlantis and probably also unheard of islands in the Pacific Ocean, disappeared beneath the surface of the sea. He assigns the origin of the Caribs to Atlantis and of the Aztecs to one of the lost islands of the Pacific.

Whencesoever they may have originated, the

traditions of the Aztecs, and such of their ideographic paintings as have survived the ignorant vandalism of the Spaniards, leave no room to doubt that they came from the north, after wanderings covering long distances and embracing many years; were driven back, almost if not quite to their native land, and, in the course of centuries, returned and secured a foothold in the valley of Anahuac (Mexico), from which point they overran the surrounding country. It is probable that their ideographic paintings, of which they possessed a great number, contained a complete history of their second migration and perhaps also some account of their origin and native land; but unfortunately the Spaniards, with unreasoning fanaticism, regarded these paintings a sconcomitants of pagan idolatry, and destroyed them with a zeal more fervid than intelligent. From the principal university, which contained thousands of them, they took the paintings and made huge bonfires in the market place. And so they signalized the triumph of civilization over barbarism.

According to the traditions of the Aztecs, the first inhabitants of that part of Central America

now covered by Mexico, were a race of giants, whose name has not been preserved. The giants were destroyed by the Olmecs, of whom little else has been transmitted. The Olmecs were overrun in turn by the Xicalncs, the Otomites, the Toltecs, the Chichimecs and the Aztecs. The Mayas of Yucatan were a different people from the Aztecs, though nearly related, and possibly were descendants of the Toltecs. The Chichimecs, who are supposed to have driven out the Toltecs, and whom the Aztecs found in possession of the valley of Mexico, were probably one of the indigenous tribes that had gained temporary ascendency.

Quetzacoatl, who led the Aztecs into Anahuac, gave them their laws and went away without dying, leaving a revered memory, was a white man. He promised to return after a great many years at the head of gods with pale faces from the East. Thus the Aztecs were not surprised at the advent of the Spaniards and were disposed to receive them as welcome guests. So confidently did that faithful people rely on the promise of Quetzacoatl that Montezuma had great difficulty in persuading them

that the invaders were only men, and in rousing them to the defense of their country.

A glance at the cosmogony of the Nahuatls, as the Aztecs and their kindred races have been termed, is essential to a proper understanding of their customs and institutions. They believed in a heaven occupied by the god, Tonacatecuhtli, and his wife Tonacacehuatl. There was yet another god higher than these, the supreme being, independent and absolute. Necessarily invisible, they never attempted to represent him by images. His only designation was Teotl (God). He was spoken of as Ipolnemoani (He who gives us life); Tloque-nahuaque (He who embraces everything). The couple above named had four sons, differing in appearance and jurisdiction. The eldest was Tlatlauhquitezcatlipoca, the red god, who does not appear to have cut a very important figure in the devotions of the people. The second was Yayauhqui, who was black, and whose instincts were evil. The third was Quetzacoatl, who was white, whose instincts were good and who was the favorite deity and lawgiver of the people. The fourth and youngest was Huitzili-

pochtli, who was a mere skeleton covered with a yellow skin, but eventually fell into flesh, the war god of the Nahuatls, and the bloodthirsty deity to whom the most frequent and atrocious human sacrifices were offered. It is interesting to note in passing that they had a god corresponding in color with each of the four great families of the human race.

During six hundred years the gods remained in idleness, and then Quetzacoatl and Huitzilipochtli were made executors. They proceeded to act by creating a sun and a demi-sun, from the first of which came fire; they next created man, Oxomoco, and woman, Cipactonatl, whom they commanded to cultivate the ground with care. The woman was also commanded to spin and weave and endowed with the gift of prophecy. As a reward for her oracles she was given seeds of maize to supply food for her descendants. After starting the human race on its journey of life, Quetzacoatl and Huitzilipochtli created Mictlanteuctl and his companion Mictlancihuatl, whom they appointed rulers of the infernal regions. It will be seen further on that they created other gods as needed.

There were thirteen heavens, and probably from that belief the number thirteen had a mystic significance for the people. Some of these heavens were queerly peopled, as for example, the second, which was occupied by women skeletons; the third, by four hundred men, yellow, black, white, blue and red; the fourth, by birds; the fifth, by fiery serpents, comets and falling stars; the sixth was the empire of the wind. It was not known what existed between the sixth heaven and the thirteenth, which last was the residence of the immutable Tonacatecuhtli. To the student of comparative cosmogony there must be a notable resemblance between this unexplored heavenly region and the purgatorialdomain of the Roman Catholics.

The operation of every natural law was attributed to the active agency of a god, and so there was of necessity a multiplicity of gods. An enumeration of all of these is not within the scope of my purpose, but a few may be briefly referred to for the light they throw on the peculiar ideas of that strange people. Thus Tlalocaltecuhtli, and his wife Chalchiutlicue,

were the rulers of water, which was stored up in four pools. The water of the first pool facilitated germination; that of the second withered the seed; that of the third froze it, while that of the fourth dried it. An army of pigmies, each individual armed with an amphora and a wand, carried the water and sprinkled it in rain. Thunder was produced when one of these pigmies broke his jar.

Tezcatlipoca (the shining mirror) ranked next in importance to the impersonal Teotl. He was called the "soul of the world," and regarded as the creator of heaven and earth, the master of all things, in short, as Providence. He rewarded the just and punished evil doers. He spent much of his time on earth, going about unseen among men, and stone seats ornamented with plants were set up at street corners to afford him places of rest. He was always depicted as a young man, for time had no effect on him. Still another god who exercised a potent influence on the affairs of men was Tlacatecolotl (the reasoning owl), the evil spirit, the enemy of the human race. Incessantly opposed to Teotl, he corresponded to the devil of

the Christians. Tlaloc, the god of the sea, who, by a strange inconsistency of ideas, was supposed to live in the mountains, also figured prominently in the worship, and was specially appeased by the sacrifice of young children.

Like men the gods often had their differences. One of the most serious family jars occurred on the subject of light. Tezcatlipoca undertook to fashion a complete star and got into a controversy on the subject with the good Quetzacoatl, who struck him a blow with his stick and precipitated him into the water, where he was transformed into a tiger. More than six hundred years later they again attempted to settle the difference, and Tezcatlipoca gave Quetzacoatl a blow with his paw which hurled him out of heaven. The fall of the god produced such a tempest that nearly all mankind were destroyed, and the few survivors were transformed into monkeys. This would all appear very ridiculous did we not see in it an attempt to account for two very important events, a great catastrophe which nearly annihilated the people, and the presence of the god among men as a ruler and lawgiver. Other great disasters were

similarly explained. For example: Tezcatlipoca rained fire upon the earth and the goddess Chalchiutlicue deluged it with water. On one occasion the sun went out, and one of a race of demi-gods who inhabited the earth was transformed into a star to replace the lost luminary. He did not rise high enough in the heavens and remained stationary, whereat one of his brethren upbraided him. In his wrath he slew the offender and condemned the whole race to a lingering death. Appalled at the severity of the sentence, the chief killed the whole tribe by cutting out the heart of each individual, and finally killed himself. In this myth we probably have the beginning of the human sacrifices to which the Nahuatls were addicted, as well as the peculiar method by which they were practiced.

It has already been noted that the gods created man and woman. The first woman bore a son, but as he had no mate they came to his assistance and made him one out of a hair. A peculiar feature of the Nahuatls' cosmogony is that it embraces several distinct creations of man. Unquestionably that was an effort to

account for the origin of different races of men. Thus, we are told that the gods long after the creation just referred to, created the giants who, as has been mentioned, were supposed to be the first inhabitants of Central America. Again, after Tezcatlipoca had rained fire upon the earth and Chalchiutlicue had rained water, it became necessary to repeople the land, and Camaxtle-Huitzilipochtli struck a rock with his stick and brought forth the Chichimec-Otomites, who peopled the country before the arrival of the Aztecs. The observant reader will not fail to notice a contradiction here of the statement made at the beginning of the present chapter that the Olmecs destroyed the giants. The fact of the matter is that the traditions, and even the early writings, of every people are full of contradictions and seemingly irrelevant statements. A striking example of the latter fact occurs with the creation of the giants, in which connection we are told that Huitzilipochtli's bones then took on a covering of flesh. No doubt, though, all such statements had at first a significance that has been lost in the course of time.

The Nahuatls possessed considerable knowledge of astronomy, and in that respect surprised the Spaniards not a little. Mixed up with their knowledge, however, was a good deal of childish error. For example: They believed that the sun and moon wandered through space, which was not a great way from the truth, but they also supposed that the sun, having traversed half of the open space before him, turned back and retreated on his tracks. On the other hand, they possessed an accurate and excellent calendar, and knowing the difference between the solar and the civil year provided for it. The year, like our own was, divided into 365 days, but they had eighteen months of twenty days each, and added the extra five days to the last month. They regarded those five days as superfluous, though necessary to fill out the calendar, and called them Nemontemi, *i.e.*, useless. They also had a cycle of fifty-two years, divided into four periods of thirteen years each. In this cycle the difference of duration between the solar and civil year was provided for by the addition of thirteen days to the end of the cycle. They entertained a superstitious dread of the

destruction of the world during the transition from one cycle to another, and so the last thirteen days of each cycle were given up to peculiar observances which will be described further on in connection with the forms of worship. This, it must be remarked, was the Aztec calendar. The Mayas of Yucatan had a somewhat different, though equally accurate calendar.

The places of worship—it would be a misnomer to call them temples—were termed Teocalli, or Terpan (houses of God). The two names appear to have been used indifferently by the Nahuatls, but the former is the more familiar to English ears. They were pyramidal-shaped stone terraces, of different height, usually composed of ten terraces, and surmounted by two conical towers. The chief place of worship in the City of Mexico, at the advent of the Spaniards, measured more than 350 feet on one side of the base, 250 feet on the transverse, and 120 feet in height. The platform at the summit measured more than fifty by one hundred feet and the towers that surmounted it were over fifty feet in height. The religious observances were held upon the un-

covered platform, and the towers were used for storing the ashes of the dead kings and the vestments and paraphernalia of the priests.

The Teocalli were erected in the midst of squares surrounded by thick walls, and in cases of need were used as fortresses of defense. The last stand of the Anahuac nobles against the Spaniards was made upon the structure just described. The sacrificial ceremonies were performed upon the crowning platform, and on such occasions the square below was filled with a vast concourse of people. The sacrificial stone, or altar, an oblong block with a convex surface, was placed near the center of the platform, but closer to the eastern side, because the majority of the sacrifices were performed in the early morning while the sun, which played an important part in those shocking rites, was still in the eastern sky. The number of priests employed varied from two to a score or more, according to the importance of the ceremony. They wore long hair, which was often stained with different colors or ornamented with brilliant feathers. Their faces were painted black, with the lips white. The

officiating priest wore a crimson gown, while his assistants wore white gowns with black trimmings. The knife used was made of obsidian, a mineral with a feldspar base, capable of taking an extremely keen edge. The victim was held by the celebrant's assistants, back down upon the altar, the convex surface of which caused the breast to protrude upward. Then the man in crimson deftly cut out the poor wretch's heart and held it in his gory hands, first to the rising sun, and next to the adjacent image of the god who claimed the sacrifice. If, as was sometimes the case, the image had an open mouth, the bleeding heart was placed in it. Generally, however, the heart was thrown to the base of the idol. This part of the rite was horrible enough, but what followed was still more revolting. The arms and legs of the victims were cut off, and furnished to the king or his nobles to be eaten at a banquet. Although the king had the first choice, the flesh only of distinguished victims was served at his board.

Religious feasts were held almost every day in the year, and as every feast claimed its human victim, or victims, besides birds and

animals, the number of persons immolated was enormous. It has been calculated that, at the arrival of the Spaniards, the number of persons annually sacrificed within the confines of Anahuac alone was fully 20,000. To supply victims for the sacrifice, the Anahuacs preferred capturing to killing enemies encountered in battle. But they did not rely entirely on captives for their victims. These were frequently selected from among themselves, and numbers even volunteered. Young children, especially, were offered by their parents. This may seem incredible, but it must be understood that to be offered to the gods was an enviable distinction, for it brought honor to the victim's family, and everlasting happiness, with a prominent place in heaven, to the victim. Nor were the Anahuacs entirely peculiar in this respect. An example of religious zeal very nearly parallel to this is to be found in the history of the Martyrs during the early stages of Christianity.

The most popular as well as the most imposing religious festival appears to have been the great feast of Tezcatlipoca, held annually toward the close of the year. The human victim

for this occasion was a captive, selected on account of his physical perfection. He was chosen about a year in advance, and thenceforth treated like one of the princes of the realm, with the greatest deference. All of his wants were ministered to in the most liberal manner, and he was allowed the utmost freedom without, however, a chance of escape. Within a few weeks of the fatal day he was presented to a number of high-born maidens, from whom he was at liberty to select three wives, and these were married to him with great pomp and ceremony. But though pampered, and petted, and honored, nothing could save him from the sacrificial stone on the appointed day. This singular custom has been spoken of as the refinement of cruelty, but I think that is a misconception of the Aztec character. The treatment of the victim was intended as a foretaste of what the gods had in store for him.

In spite of their horrible rites, the Nahuatls were not a cruel race. Their domestic relations, their treatment of animals, their patient demeanor under the shocking barbarities of the Spaniards, and the gentle disposition of their

descendants of the present day, prove conclusively that they were a kindly people. They were far from being cannibals, and yet we have seen that they eat portions of the bodies of victims of the sacrifice. The barbarities of their rites are fully explained by their religious zeal, and the influence exercised over them by the priests. The history of the Inquisition, and later of witchcraft, show what astounding and atrocious cruelty can be practiced in the name of religion.

We have seen that there was a multiplicity of gods, and as each god had a large retinue of priests, there was in consequence a multitude of priests. They were not only the spiritual advisers of the people, they were academicians, historians, teachers, and also temporal counsellors of the sovereign. They were held in the highest esteem, and their influence was immense. The office was eagerly aspired to both by men and women, and children of both sexes were consecrated to it at birth, and carefully reared and educated for the duties they would have to perform. It followed inevitably that the word of the priest was law, and his com-

mand, no matter how revolting, must be obeyed. What was cruelty to the individual judgment lost, at once, the character of cruelty when sanctioned by the priest. Blood shedding was an essential adjunct of religious observance, for many of the gods could not be appeased in any other way. The priests pricked themselves with thorns to shed their own blood as an act of personal devotion, and the people followed their example so faithfully that every nuptial couch was hung with two acacia thorns, to be used by the bride and groom in that manner.

But while the priests were honored and venerated in the highest degree, they were held to the strictest conformity with their vows. No backsliding was tolerated, while any grave breach of rectitude, like unchastity, was promptly punished with torture and death. Consequently they were an austere and virtuous class. Even the Spanish missionaries could find nothing to say against their personal habits. Marriage was permissible to them and not uncommon, and they were also at liberty to resign the office and retire to secular life and pur-

suits, after the expiration of a fixed term. Having earned the honors attached to the priesthood, many graduates annually availed themselves of this privilege.

A remarkable ceremonial, known as the extinguishing and rekindling of the fire, was held at the end of the cycle, once in every fifty-two years. Reference has already been made to the superstitious dread entertained that the world might be destroyed during the transition from one cycle to another. The critical period was during the added thirteen days at the end of the expiring cycle. Each head of a family put his affairs in order for a final settlement; every household was prepared for the great catastrophe; everything was put in readiness as if the family was about to start on a protracted journey, and then the fire was extinguished in every palace and hovel in the land. Meanwhile the priests were busy in their sanctuaries, doing everything in their power to appease the wrath of the gods, and blood flowed in torrents upon the teocalli. Fasting, praying, blood-letting, and the practice of other austerities, were kept up until the last hour of the last

of the fateful thirteen days, and then there was a great outburst of rejoicing. The priests rekindled the fire, and messengers with burning brands were sent out, on the run to renew the flame on every hearthstone throughout the length and breadth of the empire.

The principal act of personal devotion consisted in touching the soil with the middle finger of the right hand, and carrying to the mouth the dust that adhered. Prostrations, fasts, and other austerities, such as the blood-letting above referred to, were also commonly practiced. Frequent offerings to the gods was an essential part of personal worship. I have already mentioned the dreadful custom of tendering young children for the sacrifice. A much more general and less shocking custom was the placing of food and savory dishes before the idols under cover of darkness. It may be supposed that this custom was particularly encouraged by the priests, as it reduced expenses and saved time and trouble in the sanctuaries. Here is the most popular form of prayer, that which was offered to Tezcatlipoca:

"Mighty God, thou who gavest me life and

whose slave I am, grant me the supreme grace of giving me meat and drink; grant me the enjoyment of thy clemency, that it may support me in my labors and my wants. Have pity on me, who live sad, poor, and abandoned, and since I serve thee by sweeping thy temple, open to me the hands of thy mercy."

The usual form of oath was: "Perchance is not the eye of God upon me." The sin of false swearing was regarded as so heinous that it was seldom committed. The Nahuatls believed in the existence of the soul, which was held to be immortal, and immortality was also accorded to all animals. As has been previously shown, there were various places of abode for departed spirits. These, however, required certain earthly aliments for their sustenance and, consequently, some maize and a metlate, or stone for grinding it, were always deposited with the remains of the dead. In the case of a wealthy descendant a treasure, equal in value to his earthly fortune, was also deposited at the bottom of the urn containing the maize, in the form of gold ornaments or precious stones. It was the discovery of this fact that led the

Spaniards to desecrate all of the sepulchres they located. The dead were always cremated, except the bodies of criminals and, strange to relate, lepers, which were buried, probably as a mark of dishonor. The ashes of the dead were, however, buried or deposited in caverns or under cairns. There were no fixed burial places, and thus the ashes of a land owner were often buried in one of his fields. A singular custom was connected with the disposition of the honored dead. Among the domestic animals of the Nahuatls was a species of hairless dog, called techichi, highly esteemed as an article of food. When a member of a household died one of these animals was always killed, and the body buried with the ashes, to supply the departed spirit either with an enjoyable dish or a valued companion on its journey to the other world.

The marriage ceremony and customs pertaining thereto were correspondingly peculiar. When a young man had determined on the selection of a wife, the intervention of a female agent was secured, and that agent visited the parents of the bride and made a formal proposi-

tion for her hand, on behalf of her client. The parents affected reluctance to part with their daughter, and craved time for reflection. No answer was expected for the moment, but after the expiration of a few days the agent paid another visit to the girl's parents, and represented that her client could not be kept waiting indefinitely. Still no immediate answer was given, but the agent then withdrew from the negotiation, as the father of the young woman was expected to announce his decision in person to the suitor. If the answer was satisfactory the settlements were arranged, and an interchange of presents, consisting chiefly of nuptial garments, effected, and within a day or two the bride was conducted by her parents to the residence of her future husband. The couple was made to stand side by side upon a nuptial mat, while a priest joined the edges of their garments together. They were then declared man and wife. Sometimes the young man appealed directly to the priest, instead of employing the services of an agent, and that functionary announced that on a certain day the young man would take to wife the first young woman

he met on the street. By virtue of that announcement all young women who did not desire the aspirant for a husband had ample warning to stay at home.

Nicaragua at the time of the Spanish conquest was occupied by several different tribes, maintaining practically independent governments. Consanguinous to some extent, there seems to be little room for doubt that they were not all of the same stock. Upon the highlands east of the lakes, now divided into the departments of Chontales and Matagalpa, the dominant element appears to have been a branch of the Mayas of Yucatan, while the Chontalli (barbarians) were the aborigines, by some supposed to be the ancestors of the Lenca Indians of to-day. The Cholutecas occupied the country about the Gulf of Fonseca; the Negrandanas, about Leon; the Diriangans, about Masaya; the Niquiranas, or Nicaraguans, about Rivas; and the Orotinas, further south. These are evidently Spanish renditions of the Nahuatl names, but as I have not been able to discover the originals they will answer my purpose. The Nicaraguans were supposed to be

pure Aztecs, and were by all accounts the most advanced in civilization of all the tribes here enumerated. They probably practiced the Aztec rites, yet nowhere in the district they inhabited, nor indeed, in any other department of Nicaragua, could I find any remains of teocalli, such as existed in Anahuac and are still to be seen in Yucatan. Neither have I been able to discover a reference to them in any work I have consulted, either ancient or modern. Squire mentions finding a sacrificial stone among some overturned and half-buried statues upon the Island of Zapatera, but he is silent as to the teocalli. What appears to have been a place of worship is on the mountain isle of Momotombito in Lake Managua. In a sort of a natural amphitheater a large number of statues were arranged along the four sides of a square, with the faces presented inward. Groups of statues have also been found on the site of the ancient town of Subtiaba, south of Leon; upon the Island of Pensacola, near Granada, and upon the Island of Zapatera, and it is possible they all were collected about similar places of worship. This, however, is mere conjecture.

The Spaniards with blind fanaticism mistook every carved stone for an idol, and ignorantly proceeded to deface or destroy it. In that way nearly every piece of sculpture in the country was either broken or mutilated. It was next to impossible to destroy them completely, as they were generally fashioned out of trachyte or some other very hard stone, but the nose and other projecting parts were usually broken off. The Nahuatls undoubtedly had idols or images of their gods, but they differed in character and appearance from the works here considered, which were really statues, or monuments of dead heroes and statesmen. The images of the gods were cut in relief on square or oblong slabs of teotetl (divine stone), a brilliant black marble, and portrayed, either in the face or surrounding insignia, the distinctive characteristics of the deity. Thus Tezcatlipoca was invariably depicted as a young man, for, being immutable, time had no effect on him. Huitzilipochtli, being the god of war, was given a terrible and ferocious aspect. The statues, on the other hand, were busts or full-length figures in various positions, generally of heroic size,

unmistakably fashioned to commemorate the features and attributes of individual men and women. The faces and expression have the differences corresponding to the variations in the appearance of individuals. The statesman is distinguishable by his thoughtful expression; the warrior by his helmet, sometimes the head of a predatory animal whose traits he was believed to embody; and as fewer women than men have risen to prominence in the affairs of state, so we find fewer female than male figures among these statues. Any reader can satisfy himself on most of these points by a glance at the specimens of these statues in the Smithsonian Institution at Washington.

It is not at all unlikely that the stautes were associated in a certain way with the worship of the people, for as in life these exalted men and women were habitually present on public occasions, even if they did not take an active part in conducting the ceremonials, it was natural enough to suppose that they would continue to be present in spirit after death, and so as an act of duty, if not affection, their statues were grouped about the places of public worship.

Subsequently to my visit a German archæologist, said to have been connected with Dr. Schlieman's investigations at Majcenal, made some discoveries on the Island of Zapatera, which are thus described by a newspaper correspondent: "I reached a landing place, where the remains of a small artificial harbor are still to be recognized. I was guided by an Indian to a staircase hewn in huge rocks. In ascending the hill I counted seven hundred and seven steps. Arrived at the top, I saw a vast plain, in the center of which rise seven elevations that form a Latin cross.* These hills are sur-

* The presence of the cross in Central America greatly astonished the Spanish discoverers. In Yucatan and throughout the Aztec Empire it was the emblem of the "god of rain." There has been much speculation by various authors respecting its origin, as a religious emblem, in Mexico and Central America. It has even been supposed that some of the early Icelandic Christians of the ninth century may have reached the coast of Mexico, and introduced some knowledge of the Christian religion. But the cross was a religious emblem of the greatest antiquity, both in Syria and Egypt, and baptism was a pre-Christian rite. This and other observances, such as auricular confession and monastic institutions, were so mixed up with the worship of a great number of gods, at the head of which was the worship of the sun, and were associated with such horrid human sacrifices and pagan ceremonials, that it is more likely that they acquired the cross, with other pagan traditions handed down to them from a remote antiquity, from the common stock from whence both the inhabitants of the Eastern and Western Hemispheres were descended. There is good evidence for supposing

rounded by a number of small cemeteries, that evidently contain the remains of the victims * sacrificed to the (seven times seven) forty-nine idols, besides statues of priests and kings cut out of hard, black, polished granite. The elevation that forms the center of the cross is about twice the size of the remaining six, and is some hundred feet in diameter. On the top of it are seven large sacrificial stones, surrounded by vessels into which the blood of the victims ran, when the rites were performed. It is evident that on the center hill the high priests performed their bloody office, as on the

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that young children were offered up in sacrifice to Tlaloc, the god of rain, the very god whose emblem was the cross—a contrast too great to the "Suffer little children to come unto me" of the loving Saviour, not to make the mind revolt against the idea that the cross of the god of rain was derived from the cross of the Christian. (Belt, "Naturalist in Nicaragua.")

*The correspondent here falls into a manifest error. The bodies of persons sacrificed were never preserved. We have seen that parts were given to the king and the nobles to be eaten at their festival banquets. The remainder were fed to domestic animals kept in the menageries. The skulls of certain victims, probably distinguished captives, were inserted in curious figures into the walls of buildings, the use of which has not been determined, that surrounded the base of the teocalli. The cemeteries referred to, if cemeteries they be, were probably those in which the ashes of priests were deposited. Further on he makes another error concerning the use of horses' heads as helmets. The horse was unknown to the Nahuatls before the arrival of of the Spaniards. The helmets referred to undoubtedly represented the head of some other animal.

smaller elevations the sacrificial stones are smaller and of inferior workmanship.

"The center hill is adorned with seven huge idols, some of them perfectly preserved. The principal one represents a figure about fourteen feet high, showing a striking likeness to Assyrian idols, and wearing a long beard (probably a statue of Quetzacoatl,) on which remains of red coloring are still visible. The head is covered with a huge elephant's head. On one side of this rather hideous idol stands a female figure of very fair appearance, whose features are strikingly Egyptian. The head is covered with the head of a lioness, the mouth is wide open. On either side is the statue of a high priest, whose headpiece consists of a big snake curled up, fitting the grim-looking face like the turban of an Eastern priest; in the right hand the figure holds a short knife, while the left hand holds something that looks like a human heart. The other idols represent both male and female figures, the former of hideous aspect, while the latter present pleasant faces. The ears of the female figures are pierced with holes, which served to hold earrings, as one of

these was found buried in the soil. The value of the gold and pearls in it amounted to some five hundred dollars, not including its artistic and archæological value; the workmanship was very fine. The heads of all these statues are covered with monstrous heads of lions, alligators, tigers, horses, sheep, and other animals, the species of which it is impossible to determine. Most of the statues are in a very fair state of preservation, while some have been disfigured by shocks of earthquakes. Judging from the effect of the weather on these idols, they must be thousands of years old, considering the hard quality of the stone and the damage done. Thanks to the hidden position of the place, it has escaped destruction by the hands of the fanatical Spanish priest. On some of the idols there are hieroglyphic inscriptions that have absolutely nothing in common with the rude inscriptions generally found on ancient Indian remains in Central America.

"Descending again the artificial staircase, I remarked that it must have been long in use, as it was pretty well worn out by footsteps. It evidently led to one of the principal places of

worship, where masses of people congregated during certain periods of the year to witness the bloody rites of their priestcraft. That the place was inhabited, except perhaps by a few guardians, is not probable;* for the surroundings consist of barren rocks, and traces of habitations are not found.

"From this gloomy place I went to a smaller island, which certainly in times past formed a part of Zapatera. On this barren spot, which is partly covered by volcanic ashes, stands a monolith about 200 feet in diameter. The top is covered with a variety of cabalistic signs—tigers, lions, snakes, hippopotami, and other strange animals—all hewn in the rock and partly disfigured by the weather. Very remarkable are a great many Latin, Maltese, and Greek crosses, beautifully worked and well preserved. In the center of the surface there is a large, stately figure of grim appearance, holding a smaller figure tight in each hand; perhaps the representation of a powerful chief, holding his

* The Island of Zapatera has long been known as uninhabited, and, being a sacred place, probably never was inhabited, except by priests.

vanquished foes. The place is covered with inscriptions that bear a great resemblance to the ancient inscriptions on the Island of Cyprus. Professor Max Müller, of Oxford, to whom some fragments have been forwarded, deems it possible to decipher them."

The Nahuatl sculptors were skillful artists, but they apparently strove to portray strength rather than beauty. All of their works display power, but I have not come across one that showed beauty. The same remark may be made of their buildings. This peculiarity, I think, expressed a trait of the national character. In their enduring works they preferred the embodiment of strength to beauty. That they were not lacking in appreciation of the beautiful is shown by the colors used in their ideographic paintings, the exquisite imitations in feather work of birds, and the extraordinary love of flowers everywhere exhibited. Inasmuch as stone implements appear to have been used instead of metal instruments, it is difficult to imagine how the sculptors wrought such results with the means at their disposal. The following comment has been made on the sub-

ject by an acute observer: "It must have taken months, if not years, to have fashioned the statue I have figured out of the trachyte, without tools of iron, and it strikes one with wonder to think of the patience and perseverance with which the details were worked out. No eye-servers were these Indians; before and behind they bestowed equal pains and labor on their work, undeterred by the hardness of the materials or the rudeness of their tools."

The pottery of the Nahuatls deserves a passing notice. In shape and character it is the same to-day as it was in the time of Montezuma. The first drinking and household vessels of the people were made from the hard thin shell which incloses the fruit of the xicalli tree. This shell, in the smaller varieties, is almost a perfect egg shape, but in the larger is more spherical. In consequence of the shape the vessels could not stand unsupported, and so socketed rests of various forms were made for them. When the people arrived at the stage of making earthenware the forms of the xicalli shells were copied, and that necessitated the making of stands also. In the lapse of cen-

turies no change from those forms was ever made. Pottery was made with or without enamel, but the enameled variety was probably made only for the use of the wealthy. This variety was also sometimes ornamented with colors. The spouts and handles of the vessels, as well as the handles and feet of the stands, were frequently made in the form of the heads of animals. I have the head of an iguana designed for this purpose, which is a marvel of strength and expression, the attitude being one of defiance or defense. The xicalli vessels were often elaborately carved with the forms of birds, animals and plants, and this ornamentation was frequently reproduced on the earthenware. Earthenware urns in the form of the human skull, containing the ashes of the dead, have been found on the Island of Ometepec, in Lake Nicaragua. Another article of pottery made by the Nahuatls was a barnacle-shaped rattle, with slot-like openings on the sides, and containing a small ball, which the dancing girls held in their hands and shook in rhythm with their movements.

The language of the Aztecs was sweet, har-

monious, flexible, exact, rich and expressive, notwithstanding that the alphabet, as compared with ours, was meager. It lacked the English consonants b, d, f, g, j, k, r, s, and w, but contained all the other letters, which, however, excepting v, were pronounced as they are in French. The sound of o was not well defined, but it resembled the French diphthong eu. The consonants most frequently used were l, t, x, z, and the compound sounds tl and tz. L was never used at the beginning of a word. There were no sharp or nasal sounds in the language. The penultimate syllable of almost all the words was long. The plural was formed by changing the termination. For example: in substantives ending with tl these two letters were changed to me, thus: pitzotl (pig); pitzome (pigs). In like manner the termination hua was pluralized by que. It had no genders. Mixtli denoted lion as well as lioness. In order to distinguish the sexes, oquichtle (male) and cihuatl (female) were used, thus: oquimixtli (lion); cihuamixtli (lioness). It was without either comparatives or superlatives, but in their stead particles were employed. On the other

hand it had more diminutives and augmentatives than even the Italian. The substantives and verbs were more numerous than in any other language, and each verb, by the addition of certain letters, produced a multitude of other verbs. The union of simple words formed compound vocables, which were frequently veritable definitions of the objects denoted.

CHAPTER IX.

AS A WINTER RESORT.

NICARAGUA! Land of the Great Waterway, the gateway between the oceans! Land of sunny skies and sparkling lakes; of beautiful scenery; of mountains blue and verdant vales; of magnificent forests and flowery fields; of fruitful soil and innumerable fruits; of healthful and delightful climate!

Land of unusual attractions for the winter tourist. The salubrity of the climate, were there nothing else to commend the country, must, when it becomes easily accessible by the completion of the canal, make it a favorite winter resort for wealthy residents of the United States and also of Europe. Throat and pulmonary affections are almost unknown; indeed, I do not remember having heard a cough in the country, even in the moist atmosphere of the Atlantic coast. The dry atmosphere of the

Pacific slope, or of the elevated tablelands of the Chontales and Matagalpa districts, cannot fail to greatly benefit persons who suffer from bronchial and pulmonary troubles. Although a great sufferer from bronchitis for years and laboring under a bad attack of it when I left New York, I was entirely free from even a suggestion of the disease during my sojourn on the Pacific slope. Fevers, which in the United States are supposed to be the curse of that country, are extremely rare, and it would be hard to find another land in which so little disease of any kind prevails. But the reader who has followed me thus far has already had some statistical evidence on this subject.

The attractions are not, however, for the invalid alone. Any one who enjoys grand and beautiful scenery would be delighted with the country. The primeval tropical forest, with its gigantic trees, its exuberant vegetation, exquisite forms and glowing colors, is a living wonder. Its majestic mountains and smouldering volcanoes, with their canopies of smoke, lift one's thoughts to the plane of sublimity. The simple, polite and fun-loving people, their

strange and interesting mode of life, the queer Spanish-American towns and picturesque Indian villages, will furnish no end of entertainment and amusement to the pleasure-seeker. The antiquarian will find a rich field for investigation in the Toltec and Aztec remains, the forgotten places of worship, the overturned and half-buried statues, overgrown sepulchers, and strangely carved rocks. The student of natural history will find an inexhaustible store of wealth in the wonderful flora and fauna of the country. To the sportsman it is a veritable "happy hunting ground" below, stocked with an astonishing variety of game both in forest and stream, while to the yachtsman it offers one of the most changeful and charming winter cruises to be had anywhere in the world.

Being a bit of a yachtsman myself, I have mapped out this cruise, and mean to take it when the canal is opened. Leaving New York in a comfortable steam or sailing yacht, early in December, we would touch at Bermuda. Thence steering for the Bahamas, and taking perhaps a passing look at the Hole in the Wall, or a more lingering one if the weather be dirty;

running close enough to San Salvador to recall the landing of Columbus, we would head for Cape Maysi; possibly drop anchor for an hour or so at Baracoa, to see how the city on the mountain side has improved under American influences. Next we would take a somewhat leisurely look at our newly acquired possession, Porto Rico. Having done that we would sail close enough to scan the bold headlands of Haiti and lay our course for that lovely isle of the sea, Jamaica, and stretch our legs for a day or two in quaint old Kingston, where the Yankee bartender mixes the rum-sour with divine skill. While lying at anchor here we will not forget to cast a line for the sportive king-fish, who is sure to tempt us by leaping out of water close aboard. The next run would take us to Greytown, giving of course a wide berth to Roncador, destroyer of the noble old Kearsarge and many another good ship. I have "touched" at Roncador and do not care to repeat the experiment. But by this time Uncle Sam will have built a lighthouse there for the protection of the unsuspecting mariner. Before we come to the latitude of Roncador, we will have caught

the northeast trade wind; this, if our vessel be a sailer, will bowl us merrily under shortened sail to Greytown, where we will tarry long enough to pay our respects to the "governor," assure him that we have nothing dutiable aboard, and perhaps accompany him to a Sunday cock-fight.

We shall begin our trip through the canal by daylight so as to see the grand avenue through the forest, the foothills of the Cordilleras at its head; catch glimpses of glowing orchids against the walls of green on either hand, the snowy, saffron and purple domes of great flowering trees in the distance, and marvel at the wonderful luxuriance and infinite variety of vegetable life. But while our thoughts are lost in contemplation of the affluence of nature, they will be suddenly recalled to the masterful work of man. At a little more than nine miles from Greytown we will reach the entrance to the first lock, which will lift the great ships, on their passage from the east to the west, thirty feet above the level of the Atlantic. Less than a mile and a quarter further on, our yacht will be lifted thirty-one feet higher by Lock 2, and

two miles beyond the head of this, forty-five feet more by Lock 3. She will then be floating 106 feet above the surface of the Atlantic and within four feet of the level of Lake Nicaragua, to which she will ascend on a gently inclined plane of water. Emerging from Lock 3 she will sail for more than three miles amid an amphitheater of hills, through the artificial lake created by flooding the valley of the Deseado, then she will enter the great eastern divide cut, a rift in the backbone of the continent, more than 140 feet wide, nearly three miles long, and with precipitous sides in places 300 feet above the surface of the water.

Beyond the divide cut our yacht will enter another and more imposing artificial lake, formed by flooding the valleys of the Limpio, Chanchos and San Francisco, surrounded by a grander amphitheater of hills overtopped by mountains. A twelve-mile run, with booms broad off, before the perennial trade wind, will take us to the noble San Juan River, arrested in its flow and materially widened by the great dam at Ochoa, to which we will be close enough for a good view. A short distance above Ochoa

we will come to the mouth of the erstwhile rapid and turbid San Carlos, now rendered limpid and sluggish by the Ochoa dam, flowing down from the unexplored mountain regions of Costa Rica, where strange tribes of Indians are said to exist, and if so inclined, we might run some leagues up its course to satisfy our curiosity on this and other points. Returning to the San Juan, we would follow its umbrageous, palm-covered and liana-festooned banks upward, presently coming to its debouchment from the continental mountain range, where, at first sight, it seems to flow out of a cavern. Entering into the shadow of the overtowering peaks, however, we discover that the river makes a sharp bend to the right, much like that of the Hudson at Crow's Nest, and comes through a wide gap in the mountains. The remainder of our passage to the lake will probably be devoid of special interest, for we will not be bothered by the Machuca or the Toro rapids, where, in the old transit days, both passengers and freight had to be transferred from steamers to lighters, which were poled at the former and warped up stream at the latter. The old town

of Castillo, at the foot of the Toro rapids, will have disappeared beneath the surface of the river, but perhaps a newer and more American settlement will have replaced it higher up the hillside, but at any rate we will gaze with interest at the old Spanish fort crowning the summit of the hill, a fort that the Spaniards fondly deemed impregnable until the great Nelson reduced it. Our voyage will not be a lonely one, for the argosies of the east and of the west will be passing each other at our side, and the long reigning solitude of the forest will be broken by the busy life of commerce; the silence of the ages by the forceful pulsations of the untiring steam engine.

At San Carlos we will come to the head of the river, and get our first view of the lake. There is a high hill at the termination of the north bank and, of course, an old Spanish fort upon the crest of it. We will find it well worth our while to lie over here long enough to get a view of the sunset from the ramparts of this old fort. Few finer sights can be had the wide world over. It is a picture embracing water, mountains and an indescribable display of color,

Next morning we can run over, still before the trade wind, to the volcanic and comparatively unexplored Island of Solentinama, surrounded by a group of sister islets, almost due west, glowing like an emerald in the light of the rising sun. If we find nothing there to interest us, we can run over and explore the western shore, proceeding leisurely northward toward Ometepec, but keeping an eye to windward, with a care for our spars, for the afternoon sometimes brings dangerous squalls to the lake, and to be caught unawares in one of these means disaster. Ometepec and its twin, though shorter peak, Medeira, with their Indian villages and flourishing coffee plantations, will afford interest for two or three days' sojourn, if not more, besides furnishing the archæologist of the party with abundant employment. Further to the northward we will raise the sacerdotal island of Zapatero, of which and its relics something was said in the last chapter, but the landing party must keep a sharp lookout for rattlesnakes.

A twenty-mile reach with the wind slightly forward of the beam will carry us from Zapa-

tera to the harbor of Granada, where we can anchor with security in the shadow of the double-headed volcano Mombacho. The city of Granada, with its unfinished cathedral, its fine market place and other attractions, will probably claim our immediate attention. But having seen the sights of this typical Spanish-American town, and possibly a performance at the theater by a company of strolling players, we can choose between a railroad trip to the ancient Indian city of Masaya and an exploration of the wonderful archipelago on the outer side of the harbor. It embraces more than 600 islets, whose separating waterways are embowered with branches and festooning vines, and resplendent with flowers of different hues.

Granada is about twenty miles below the head of the lake where the so-called Rio Tipitapa brings down, during the rainy season, the overflow of Lake Managua. By the terms of the concession the grantees were to build a subsidiary canal connecting the lakes by this passage. If this be finished, we can continue our cruise up to the head of Lake Managua, so as to get a look at that extraordinary and majestic

volcanic chain, the Marvels, with Momotombo at the near and Cosaguina at the farther end, which is worthy to be ranked with the Seven Wonders of the world. Returning, we can follow the eastern shores of both lakes and get a fine view of the lofty, though distant, mountains of Matagalpa and Chontales. If time permit, we can even run across to the westward, when Ometepec is abeam, and drop through the canal into the Pacific for a short cruise in its shining waters. But if inclined to sport we may tarry in the lake and find on either shore an abundance of large or small game, with fish of various kinds, without number, in the lake and its contributing streams.

Game is very plentiful in all parts of the country, and on a tramp I made through the great forest, from Greytown to the San Francisco River, a distance of about fifty miles, I expected to have good sport, perhaps kill a jaguar or a puma, at least a deer or a chanchos (wild hog), but the only mammals I surprised was a troop of big black (Congo) monkeys, which, although they often make "night hideous" with their roaring, I could not bring my-

self to shoot. There is a large, yellowish-brown, fruit-eating monkey (*Ateles*), called the spider monkey, which the natives slaughter without compunction and prize highly as an article of food. For my own part, however, there is something so nearly human about a monkey that I would almost as soon kill a man, and as for eating one, well, it is possible that I might be driven to it in the last stages of starvation. The white-faced cebus monkey is also plentiful, but less frequently eaten. But while I did not find any game, I used my Winchester on one occasion with a good deal of satisfaction, and at the same time covered myself with glory in the eyes of a fellow-traveler of unblemished African descent.

One day while following a narrow trail through underbrush so thick that it was seldom possible to see twenty feet in any direction, this negro, who was a hundred yards or so in advance of me, began to howl in the most lugubrious manner. Supposing the man had injured himself in some way, I hurried to his assistance, and my surprise may be imagined when I discovered him perched upon a stump, gesticu-

lating wildly, with his eyes staring fixedly at a slight opening on the left side of the trail. My first impression was that the man had suddenly gone mad, but when I asked him what was the matter, he found voice to exclaim: "Enty you see dat snake!" Following the direction of his eyes I saw, about twenty yards from me, a large snake, apparently of the python family, its head, raised about four feet above the ground, swaying slowly from side to side, its mouth wide open and its long forked tongue darting viciously back and forth. The negro was about the same distance from the reptile as myself, somewhat beyond it, on the line of the trail, and could easily have sought safety in flight, which, however, did not seem to have occurred to him. In truth, he was absolutely paralyzed by terror. It was a genuine case of snake-charming.

"See me shoot his head off," I said.

"Golly, you can't do dat," he replied, but with an evident expression of relief.

Calculating the extent of the oscillation described by the snake's head and taking the median line, I aimed at the junction of the neck

and skull. Of course I expected to kill or disable the snake, but not to completely fulfill my promise to the frightened negro, so it was a surprise to myself when, at the crack of the rifle, the creature's head dropped on one side, sustained only by a shred of skin, while the body went into a paroxysm of wriggling. The negro leaped off his perch with a shout of gladness that made the forest ring. The reptile was from twelve to fourteen feet in length, but it was not of a venomous species.

I was not a little surprised at first, that I did not find any game on this tramp through the forest, especially as numerous signs indicated its presence in abundance, but I was satisfied by reflection that our party was too large; it consisted of nearly forty persons. The noise made in breaking our way through the dense underbrush gave the animals ample warning of our coming, while the underbrush prevented us from seeing them at any distance. Even the most dangerous beasts of prey will slink away from the presence of man in numbers, and if unmolested sometimes from a solitary man. Mr. Belt relates an encounter with a jaguar

which he unexpectedly came in contact with while supposing he was in pursuit of a tapir. The jaguar is the tiger of this country and is greatly dreaded for its ferocity. As I could not improve on the story I will give it in his own language. "To my amazement out stalked a great jaguar (like the housekeeper's rat, the largest I had ever seen), in whose jaws I should have been nearly as helpless as a mouse in those of a cat. He was lashing his tail at every roar, showing his great teeth, and was evidently in a bad humor. Notwithstanding I was so near to him, I scarcely think he saw me at first, as he was crossing the open glade about twenty yards in front of me. I had not even a knife with me to show fight with if he attacked me, and my small charge of shot would not have penetrated beyond his skin, unless I managed to hit him when he was very near to me. To steady my aim if he approached me, I knelt down on one knee, supporting my left elbow on the other. He was just opposite me at the time, the movement caught his eye, he turned half round, put down his neck and head toward the ground as if he was going to spring,

and I believe he could have cleared the ground between us at a single bound, but the next moment he turned away from me, and was lost sight of among the bushes."

I did not see any signs of the jaguar, but I saw many of the wari, or chanchos, as the natives call them, wild hogs (*Dicoteles tajuca*), which is said to be a favorite prey of the jaguar. The wari goes in herds of from fifty to one hundred and will assist each other against the attacks of its enemy, but the jaguar is too cute for them. "He sits quietly upon a branch of a tree until the wari come underneath; then jumping down kills one by breaking its neck; leaps up into the tree again and waits there until the herd departs, when he comes down and feeds on the slaughtered wari in quietness." The wari is said to be an exceedingly good article of food, so the jaguar must be somewhat of an epicure in his way. I did not hear so much of the puma as I did of the jaguar, and therefore inferred that it was less numerous, but as it is known throughout the length of the continent as the "mountain lion," it is probably confined to the mountainous districts.

Of other large game, deer are plentiful on both the Atlantic and Pacific slopes. In the neighborhood of Rivas, on the west side of the lake, they are abundant, while in some parts of Chontales, on the east side of the lake, they are so numerous that it is necessary to build stockades to keep them out of the cornfields. Belt tells a queer story of a hunter in the Segovia district, near the Honduras border, who had a trained ox. He drove the ox into the woods or fields, and whenever that faithful animal saw a deer he began to browse and gradually approach the deer. The hunter following close behind the ox easily got within range of the deer, and thus usually killed two whenever he went out hunting. Oscelots are frequently found in regions east of the lakes, also pisotis, a raccoon-like animal hunting in packs for birds' nests or iguanas. The prairie wolf, coyote, coyotl of the Aztecs, is found in packs upon the tablelands and hilltops of Chontales and Matagalpa, the tapir in the valleys. The guatuse (pronounced watusa), an animal with reddish brown fur, about the size of a hare, but shaped more like a pig, is very abundant all

over the country and highly esteemed for the table. I had a taste of it, and must add my approval of the native estimation.

Alligators are numerous in the lower San Juan and the lagoons thereabouts and also in Lake Nicaragua. They are said to be plentiful throughout the river's length, but I saw only one between the mouth of the San Francisco and the lake. That was at the Toro rapids, and was a monster. The head alone seemed to be fully six feet in length, and the whole body could not have been less than twenty-five feet long. The snouts of these alligators are more pointed than those of the animal found in the southern parts of the United States. On the highlands the iguana, a gigantic lizard from a few inches to several feet in length, having considerable resemblance to the alligator, is very abundant. It lives in holes in dry soil and is frequently to be seen about human habitations, running about on low roofs and stone walls. It is extremely quick in its movements. The natives eat it when they cannot get anything better, and are said to relish it. The meat is white and not uninviting in appearance.

Birds are extraordinarily numerous, and among them some very fine varieties of game birds. The chief of these is the curassow, of which there are several species. Mr. Belt found "the fine curl-crested curassow (*Crax globicera*), as large as a turkey, jet black, excepting underneath," in the forests about Santo Domingo, in the Chontales district. "This kind would always take to the trees, and was easy to shoot, and as good eating as it was noble in appearance. The female is a very different looking bird from the male, being of a fine brown color. Dr. Sclater, in a paper read before the Zoological Society of London, June 17, 1873, stated that in the South and Central American species of *Crax* there is a complete gradation from a species in which the sexes scarcely differ, through others in which they differ more and more, until in *Crax globicera* they are quite distinctly colored, and have been described as different species. The natives call them 'pavones,' and often keep them tame; but I never heard of them breeding in confinement. Another fine game bird is a species of penelope, called by the natives 'pavos.' It feeds on the

fruits of trees, and I never saw it on the ground. A similar, but much smaller bird, called 'cha-chalakes,' is often met with in the low scrub."

Mr. Belt also mentions mountain hens (species of *Tinamus*), about the size of a plump fowl, tasting like the pheasant; two species of grouse, and a ground pigeon, all palatable, as not uncommon in the same locality. I did not hear of any quail, nor have I been able to come across any mention of them in the books, but as there are at least two species in California, where the fauna is in many respects similar, they are probably also to be found in Nicaragua.

Ducks of various kinds are found on the lakes in large quantities. The most notable varieties are the muscovy and a small whistling duck, about the size of the blue-wing teal, which is extremely good eating. White egrets and several beautiful species of cranes also abound, and have their roosting places on the small islands. Many species of waders frequent the shores of the lakes and the river banks. One of these is the hour bird, elsewhere spoken of, a bird somewhat larger than the jack-snipe. On the banks

of the San Juan I saw numbers of a very beautiful snipe, shaped much like the English snipe, but smaller and of more showy plumage. It went in pairs and had a singularly graceful way of holding its wings aloft for a second or two after lighting. Bitterns of different sizes, among them a large brown fellow, are common. Of birds desirable for their plumage alone, it will be sufficient to mention: the vulture; several species of eagle, including a large black and white one that is said to prey on the spider monkey; the splendid macaw of various and gaudy attire; parrots of many sizes and different coloring; trogons, toucans. There is an immense number of other birds, but these are of interest to the naturalist rather than the sportsman. The quesal, or royal bird of the Aztecs (*Trogon resplendens*), is said to be still found occasionally in the forests of Segovia.

The sportsman who contemplates a visit to Nicaragua will not expect immunity from troublesome insects, but these are not more numerous than in some parts of our own country. The forest is singularly free from mosquitoes and stinging flies. They may be more

abundant, however, in other localities that I did not visit, or in the same place at a different season. The "jigger," a peculiar insect that attacks the foot and burrows under the skin of the sole, where it deposits its eggs and becomes a source of great discomfort, is said to abound in the neighborhood of Greytown, but I escaped a personal acquaintance with it. Two of our party, however, were less fortunate, but the native attendants, who are exceedingly expert in detecting and cutting out the insect, gave them speedy relief. Probably the most troublesome insect in the country is the "garrapatos," or tick. It is of all sizes, from an almost invisible atom to the dimensions of a pea, and the smaller sizes are the more tormenting, for they are the more difficult to get rid of. Ticks, however, are most numerous on the tablelands. In the forests along the San Juan we were not troubled with them.

The insect most dreaded in that forest is the alligator ant, a great black specimen, more than an inch in length, who struts with pugnacious mien over logs and trunks and branches of trees. Its bite is more serious and painful than

the sting of the wasp, or even of the scorpion. It is ever ready to bite, and will continue to bite until it is shaken off. It is said that a single bite of this insect on the finger will cause the arm to swell to the shoulder, besides producing temporary partial paralysis of the limb. Men accustomed to the forest will never put their hands on a log or bush without looking out for these fellows.

Nowhere on earth, I think, will the angler find better sport than in Nicaragua. Off the beach at Greytown he can catch the powerful and fierce barracouta, varying from four to six feet in length and weighing between 100 and 200 pounds. It is a long, comparatively slender fish, steely blue on the back and sides, silver on the belly, with jaws like the bill of a duck, armed above and below with a row of broad, separated teeth more than an inch long. He is said to be the terror even of the shark. On the line he is a magnificent fighter, making long and rapid runs. Then there is the red snapper, sometimes exceeding twenty pounds in weight, not so gamy, but far more palatable, and a great variety of other edible and gamy fish. I

saw a seine hauled off the beach one day and was astonished at the number and variety of fish taken, many of which I had never before seen or heard of. The most highly esteemed fresh water fish is the juapoti (pronounced wah-po-ti), which resembles in appearance and size the black bass, but is far better to eat. The saballetta, a silvery fish shaped like the striped bass, is a very gamy fellow, reaching five to six pounds in weight, who, when hooked, will leap out of the water and endeavor, often with success, to shake the hook out of his mouth. He is, however, rather bony and not highly regarded as a food fish.

But the game fish par excellence of the fresh water is the "savalo-real," or tarpon, which fairly swarms in the river and lake. I am inclined to think that the San Juan River and Lake Nicaragua are the principal breeding places of this fish, and that it is a mere migratory visitant to our coast. Wherever there is a shoal place in the river it is to be seen breaking by the hundreds, and at the Toro Rapids, above Castillo, they are so numerous that they frequently jump into the boats ascending or de-

scending. As many as five, measuring from four to six feet in length, have been known to jump into a boat on one trip down the rapids, which are only fifteen miles long. They are apt to bite the occupants of the boat or injure them by floundering about, and so a boatman usually stands ready, armed with a machete, to cut their heads off as soon as they strike the deck. They are not esteemed for eating, and so nobody attempts to catch them. My own tackle was not suitable for handling them, and I could not procure any other in the country, so I did not try to land one, but I feel no hesitation in saying that grand sport awaits any angler who will go there prepared for it.

It was amusing to see the astonishment and interest my fishing tackle excited among the natives. Evidently they never had seen anything like it before, and yet it consisted merely of an ordinary black bass bait rod of lance-wood, three-jointed, and about twelve ounces, with a brass reel to fit, carrying about 150 feet of twelve thread-linen line. Both on the river and lake, indeed, wherever I used it, it elicited the greatest wonder and admiration.

I had more Spanish talked at me concerning it, most of which, by the way, I did not understand, than about any other subject. And it was simply delightful to see the boyish interest that the spectators took in my sport. More than once while playing a heavy fish, eager hands attempted to take hold of the line in an altogether kindly disposition to render me assistance. And how injured they were when I gently checked them. It was impossible to make those simple souls understand that the zest of the sport was found in giving the fish a run for his life.

I have endeavored to give the reader a somewhat entertaining account of a country that interested me exceedingly, coupled with some useful hints for his guidance, should he be at any time disposed to visit it, and having done that to the best of my ability, I will bid him "good-day," after, as the actors say, thanking him for his attention.

THE END.

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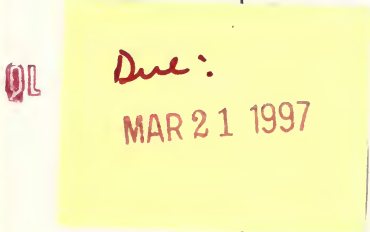

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